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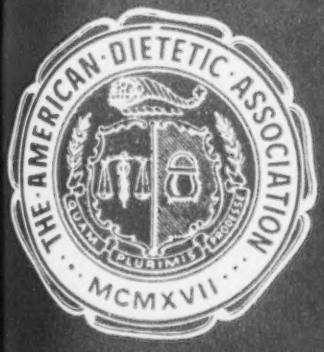

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Dental Caries of Montana Students — *Lura M. Odland et al.*

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Journal OF THE American Dietetic Association

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President's Report to Members of The American Dietetic Association—1954-55[1]

FERN W. GLEISER

Professor of Institution Economics and Management, School of Business Administration, University of Chicago

THE revised Articles of Incorporation adopted by The American Dietetic Association in June 1955, read, "The purpose for which the corporation is organized is to improve the nutrition of human beings, to advance the science of dietetics and nutrition, and to advance education in these and allied areas."

This purpose is built into the very structure of the Association's programs reaffirming the organization's qualifications for a position among scientific and educational societies.

It seems appropriate that these programs be examined in the light of the stated purpose. Therefore, this annual report is an attempt to summarize current and proposed scientific and educational activities. Although it is technically a twelve-month report, it will quickly be seen that the activities of the past year comprise but small parts of continuing long-range programs. The programs are carefully planned, adjusted, and executed to meet the ever-changing challenges which confront the hospital dietitian, the nutritionist, and other members of the Association.

THE JOURNAL

The primary instrument which interprets to members, professional associates, and the public the Association's scientific and educational status is the JOURNAL. It has earned important recognition among scientific publications through the quality and number of original research reports that are published annually. Approximately one-half of the articles in the last year have been in this category.

Another grouping of the articles in the JOURNAL relates to the four subject areas of educational activities: community nutrition, diet therapy, food administration, and professional education. The past year, one-fifth of the articles have been on food administration; one-fifth, diet therapy; one-fifth, in the areas of community nutrition and professional education, with the other two-fifths of general interest.

In addition to the scientific and educational aspects of the JOURNAL, the number of editorial pages has been increasing. The editor reports that in the past two years additional editorial material in each issue has amounted to a total equivalent of approximately four and one-half extra issues, on the basis of the 1950 to 1953 JOURNALS.

The Executive Board is studying how long this increased editorial content can be absorbed by the present staff.

ASSOCIATION-SPONSORED INSTITUTES FOR CONTINUING EDUCATION OF MEMBERS

More than 50 per cent of the applicants admitted to membership each year are from approved dietetic internships, and about 30 per cent of the remainder are former members who have applied for reinstatement. It follows, therefore, that the future administration of the Association will be influenced largely by recent and current interns. The quality of preparation in the internships today will be an important factor in the kind of leadership the Association will have tomorrow. The educational programs in the internships will be reflected in the future role of the dietitian in the administration of the dietary department of the hospital, other types of institutions, and commercial food service establishments.

The subject of continuing education of members through institutes, workshops, and short courses has been discussed by the Executive Board in the past and again this year. The logical relationship of these activities to the educational programs in the internships has received attention.

Because of the keen interest as well as the responsibility of the internship directors in the continuing education of their interns, the first institute for internship directors and their staffs sponsored by A.D.A. is being planned for early in 1956.

It is anticipated that this first institute will mark the beginning of another activity in the organiza-

[1] Presented in St. Louis at the business meeting of members of The American Dietetic Association on October 18, 1955.

tion's educational program, not only for internship directors but for other members of the Association. One's foresight focused on the development of A.D.A.-sponsored institutes must suggest need for the expansion of the Educational Department staff. A program, such as is envisioned for an organization reaching toward a membership of 12,000, will require the full time of a member of the headquarters staff. This appointment is as important today as it was six years ago when a public relations director was engaged. No one cares to think of what our situation today might be had we failed to initiate and develop a Public Relations Department.

A.H.A. and A.D.A. Joint Committee and Aid to Small Hospitals

The increased demand for dietitians has contributed to the dilemma of the small hospital which desires to provide a well rounded program of patient care that includes adequate nutrition and diet therapy as well as medical and nursing services. The administrators of these hospitals are aware of the need of the professionally qualified dietitian to assume responsibility for this aspect of the program. They recognize, too, that each small hospital cannot have the services of a full-time dietitian. The only feasible solution seems to be the plan whereby two or more hospitals may share the knowledge and abilities of a professionally qualified dietitian.

A dietitian in the role of a shared dietitian is not new. This year the Joint Committee of the American Hospital Association and The American Dietetic Association voted to sponsor a project designed to assist small hospitals in obtaining the services of shared dietitians. Indiana was the state selected to conduct the trial program.

The organizations which agreed to become active participants in the project are the Indiana Hospital Association, Indiana Medical Association, Indiana Board of Health, and Indiana Dietetic Association. Their purpose is to bring together the dietitian who is willing to divide her services among two or more hospitals and the institutions which desire to employ a professionally qualified dietitian. In the spring, a letter describing this project was sent to the presidents of state dietetic associations and the kit of materials developed for the Indiana project was offered to them.

Another activity in the interests of the small hospital which the Joint Committee sponsored this year was the mailing of a letter to all presidents and executive secretaries of state hospital associations, seeking their support in acquainting hospital administrators, through their state bulletins, with some of the solutions designed to meet the dietitian shortage. Important among the suggestions is the employment of a nonprofessional person who performs supervisory functions which the dietitian assigns and who, along with clerks, aids in the operating responsibilities of the dietary department. The cooperation of these state association secretaries has been splendid.

The placing of the emphasis on the use of nonprofessional personnel for food service supervision logically calls for the training of competent people for clearly defined duties. The Joint Committee of A.H.A. and A.D.A. has encouraged the development of such programs.

These two organizations have had representation and participation in the discussions of the course for the food service supervisor which, it is anticipated, will be initiated at Michigan State University this year. The project in that state has been a cooperative effort of the Michigan Hospital and Dietetic Associations. The Kellogg Foundation has approved a grant of assistantship to Michigan State University to support this project for three years.

Through these two pilot projects now in process of being carried out—the Indiana shared dietitian program and the Michigan food supervisor course—a pattern is being developed which, it is hoped, will be adopted by other states, thus reducing somewhat the seriousness of the shortage of dietitians.

STANDARDS FOR THE HOSPITAL DEPARTMENT OF DIETETICS

The Joint Committee of the A.H.A. and A.D.A. last year recommended that this Association appoint a committee to prepare standards for the hospital department of dietetics. The report of the committee's two years of study was approved in August by the A.D.A. Executive Board and will be presented to the Council on Professional Practices of the American Hospital Association for approval. This approval means a step toward standardization in the hospital dietary department. It is hoped that later the Joint Commission on the Accreditation of Hospitals will accept these standards.

SERVICE OPPORTUNITIES

Zealous support has been given to the continued cooperation on educational activities with national and international organizations.

Three areas of cooperation have been: exhibiting at annual meetings of allied associations; representation on committees and councils of allied associations; and active participation in the Interim Committee of Dietitians on plans for the Second International Congress of Dietetics.

Exhibits at Allied Association Annual Meetings. In the last year the Association has presented an exhibit at twelve national meetings at which an estimated 90,000 persons were registered. Approximately 45,000 leaflets of the Association were used. Our purpose in exhibiting at most of these meetings has been to acquaint people with the programs and interests of Association members and to introduce to them dietetic and nutritional materials which can be used to benefit the health of the populace. At other meetings,

the assignment has been to familiarize members of other professions and the public with educational and career guidance materials.

The responsibility for the exhibiting program is carried by the Public Relations Department. Thus this department's program is conducted in a manner to assist in fulfilling the scientific and educational purposes of the Association.

Participation on Committees and Councils of Allied Associations. Each year has seen a growing number of invitations to participate in the educational activities of allied associations. In addition to the Joint Committee of A.H.A. and A.D.A., joint committees have been established with the Mental Hospital Division of American Psychiatric Association and the Joint School Lunch Committee, American School Food Service Association and American Home Economics Association. Also, the Association has been represented on the boards of directors as well as committees of several organizations. Some of them are: the National Health Council, the Council of the American Association for the Advancement of Science, Food and Nutrition Board, the American Committee on Maternal Welfare, Council of National Organizations of Adult Education Association, Committee on Dimensional Standards for Utensils of the American Standards Association, and National League of Nursing Committee on Practical Nurse Education.

Cooperation with Other Dietetic Associations. The functions of the Interim Committee formed at the First International Congress of Dietetics in 1952, of which Dr. Margaret A. Ohlson is chairman, have been to keep in touch with dietetic organizations throughout the world and to act as a clearing house for arrangements for the Second Congress.

With the second international meeting of dietitians scheduled in Rome in 1956, important decisions have been made this year by the Executive Board concerning this Association's responsibility in the plans and program for this meeting. Dr. Ohlson represented the Association and served as Chairman of the meeting of the Interim Committee held in Rome the last week of August.

Participation in the International Congress of Dietetics signifies that the objectives of the Association do not apply to people in this country alone but that they are far reaching, affecting the future of the profession and its programs the world over.

NEW REQUIREMENTS FOR MEMBERSHIP

In 1952 the President of the Association appointed a Membership Requirements Committee which was charged with the responsibility of studying the present membership requirements in the light of present and future challenges to the profession.

This committee has been reappointed by each succeeding president. During the three-year period of committee deliberations, expressions on membership requirements have been sought from all members. Particularly have opinions been requested of members of the House of Delegates, internship directors, administrators of home economics schools and departments, and dietetic interns.

A final report of the committee has been accepted by the Executive Board. The section of the report on academic requirements for active membership in the Association will become effective November 1, 1955. However, those whose membership applications are pending will be accepted under the old requirements. Students now in college who are following the existing requirements for membership will be accepted under the old requirements until February 1959.

The new academic requirements take cognizance of the need for improving the nutrition of the peoples of the world and of the part this Association must play in this effort by providing leadership.

The Committee's recommendations on education, experience, endorsement, and reinstatement took into consideration the great need for dietitians, fair and equitable experience requirements for all areas of dietetics, and the maintenance of professional standards. The vote by the membership has indicated its support of these recommendations.

CONCLUSION

Activities of the Association represent hours of devoted work each year by hundreds of members. All who read the *Annual Report and Proceedings* are impressed with the great number of members who share in the activities and operations of the Association. These past twelve months have been no exception. While the Association has twelve appointed national committees and six boards, composed of about a hundred members, there are *hundreds* of other members who have made significant contributions through participation in Section projects, responsibility for exhibits, and special committee assignments. All of them have helped to fulfill the scientific, educational, and administrative functions of the Association.

It is this work and the cordial cooperation of the membership which has lightened the responsibilities of the Coordinating Cabinet members. For each of us I express gratitude for all the assistance in carrying forward the programs of the Association.

To the Headquarters Staff, who have more than 11,500 bosses but carry this assignment with calm poise, understanding, and superb efficiency, I express the appreciation of the entire membership. Also to each member of our staff, I express my personal gratitude for the inspiration, patience, and splendid work that has made the President's responsibilities a pleasure and never a burden.

For me it has been a very great privilege to serve the Association in the office of President. I warmly thank you.

Milestones in American Cookery Literature[1]

CHARLOTTE E. BIESTER, Ed.D.

Professor of Home Economics, Santa Barbara College, University of California, Goleta

ANTIQUE enthusiasts, attracted by the elaborate title page and format or unique content typical of many early American cook books, frequently use such adjectives as charming, delightful, or quaint, when referring to their collections. Actually, such publications provide implications of much greater significance for the student of cookery literature who examines these editions in light of a historical frame of reference. Although the printing of directions for food preparation may have appeared to be a primary motive in the production of the colonial "receipt" books, this was not the sole objective. Many titles are illustrations of the diverse ways and means used by the American patriots to achieve greater economic independence. Other complications indicate how the sale of recipe compilations afforded publicity and provided additional funds that could be used in the promotion of movements and reforms which were introduced in the colonial era.

PARKS, THE PROGRESSIVE PRINTER

Until 1742, when William Parks reprinted a popular English publication, *The Compleat Housewife* by E. Smith (1), cook books had come to this country directly from the European presses (2). Even after the first colonial press was established in 1639, the output of the average printing house for more than seventy years was limited to almanacs, catechisms, sermons, government documents, and the weekly newspaper (3). By 1710, legal and mercantile handbooks became available. These were the first staple items to be published in the provinces. Thirty years later, when a household guide in the form of a cook book was added to this utilitarian list, an unprecedented enterprise had been initiated. No subject seems to have created a greater number of best sellers. Thus, *The Compleat Housewife* became a milestone not only in the field of colonial printing but also in the American book publishing industry.

According to his biographer, Lawrence C. Wroth (4), William Parks was an outstanding civic leader as well as an energetic editor and publisher. There is even the possibility that ulterior motives may have influenced Parks' decision to expand the offerings from his press. In this period when many of the older citizens were content to retain the traditional old world patterns, he was among the patriots who envisioned the day when the colonists would become independent. If freedom were to be achieved, a well organized publicity service throughout the Atlantic seaboard would function both in attaining and maintaining this goal.

Before the publication of *The Compleat Housewife*, William Parks had gained recognition as an outstanding publisher (4). In 1727, he received a commission to be the first colonial printer of Maryland. *The Maryland Gazette*, which he edited and printed, was the first newspaper to be issued south of Pennsylvania and the fourth permanent newspaper in the country. Five years later he again was commissioned as the provincial printer for the Virginia Colony, with headquarters at Williamsburg. In 1736, he founded the *Virginia Gazette*, the seventh permanent newspaper in the colonies. During this interim, this Maryland-Virginia printer had also found other means for greater economic independence. He invented a special ink for newsprint so it no longer was necessary to get this material from England. While his fellow tradesmen were sending their books to England to be bound, Parks advertised that he would bind books "well and cheap."

The decision to reproduce *The Compleat Housewife* was another of his shrewd choices. He obviously was aware of the particularly close alliance between the Virginians and England in mercantile, religious, social, and political practices and policies. Also, he knew that lavish entertaining was one of the customs retained by many of the Virginia colonists. Evidently recognizing these factors as elements in making potential sales, he chose a title which had been popular in England since 1727.

[1] Received for publication August 8, 1955.

From this date until 1742, when it became a product of the Williamsburg Press, *The Compleat Housewife* had gone through ten successive printings in the mother country (5). According to the present-day standards, this cook book would be a "best seller." It is reported to have been printed four times in the United States, once by William Parks in Williamsburg in 1742, again by his successor William Hunter in Williamsburg in 1752, and later by Hugh Gaine in New York in 1761 and again in 1764 (2). The fact that it had been published almost fifty years before the copyright law was enacted deprived Parks of any publication rights (6).

Only four original copies are now in existence (2); however, with the restoration of Williamsburg, Virginia, a replica of *The Compleat Cook Book*, known as *The Williamsburg Art of Cookery* (1937), is available (7). Sponsored by the Colonial Williamsburg Corporation and printed by the Dietz Press at Richmond, Virginia, the latter title provides opportunity for learning much concerning cookery literature in use two centuries ago. Except for the substitution of a few authentic early colonial recipes for E. Smith's dishes which are no longer practical, thus somewhat changing the content of *The Compleat Housewife*, *The Williamsburg Art of Cookery* follows the typographical style and spirit of Parks' work. It is printed on a specially-made rag content paper which is a careful reconstruction of the water-marked paper he manufactured in 1742 at his mill near Williamsburg.

"ALL AMERICAN" COOK BOOK

Because many "firsts" are associated with *American Cookery*, compiled in 1796 by Amelia Simmons (8), this book merits recognition as another milestone in the colonial culinary classics. It came from the press in the reconstruction era following the American Revolutionary War. After much controversy, the Constitution had been ratified and the Bill of Rights had been accepted. The impact of a widespread social, economic, political, and intellectual ferment which characterized this period is reflected in *American Cookery*.

It was the first collection of colonial recipes to be protected by the new Copyright Act which had become a law in 1787 (6). It was the first cookery title in which the word American is acclaimed; again, it was the first cookery title to be prepared by an American (9). Furthermore, after an exhaustive research, Lincoln and Lowenstein in *Bibliography of American Cook Books 1742–1860*, report (9) that *American Cookery* was the first compilation published in the United States by an American woman. Like its famous predecessor *The Compleat Housewife*, *American Cookery* was the product of a colonial press, Hudson and Goodwin, in Hartford, Connecticut.

In contrast with E. Smith, who obviously preferred to remain incognito, Amelia Simmons manifested a spirit of freedom by using her first name in connection with her authorship of *American Cookery*. This, too, was a sign of the times and is somewhat indicative of progress women were making in their crusade for recognition of equality with men. During the early periods of history concerning food and nutrition, men had considered cookery an art beyond the comprehension of women. They also believed that both food preparation and the writing of directions for food preparation required a type of mentality and capability possessed only by themselves. Although this attitude had changed by the seventeenth and early eighteenth centuries, the age-old custom and philosophy was traditionally followed in many English households (10). E. Smith exemplified this heritage when she compiled *The Compleat Housewife*.

THE AMERICAN BILL-OF-FARE, 1796

In the colonial era, each patriotic citizen sought to make some economic contribution which would further the self-reliance of the American people. William Parks had endeavored to develop resources which would make the printers independent of the British trade. Amelia Simmons seems to be concerned that the colonial housewife also should prepare a bill-of-fare which would be typically American. With a flair for the opportunity of promoting the new democracy, she believed that her recipes conformed to the needs "of all grades of life." Again, emphasis was given to the recipes which were "adapted to this country." Following the trend of the period, the names applied to many of the instructions were adapted to the idea of a new republic. Election Cake, Independence Cake, Indian Slapjack, and Washington Pie are among the suggested dishes (8).

Reprinted thirteen times in the United States (9), the extensive compilation of recipes given in *American Cookery* provides food and nutrition historians, as well as horticulturalists, much information concerning colonial food interests. The variety of food materials which the author indicates were available in 1796 compares favorably with the list of items available to homemakers today. Beef, mutton, lamb, pork, and veal are included in recipes using meat. Apparently a variety of fish was also available; salmon, shad, black fish, flounder, bass, cod, eel, haddock, perch, and fresh-water trout are listed. She also included poultry and game, such as turkey, peacock, hen turkey, chicken, capon, wild duck, snipe, partridge, wood cock, pigeon, hare, and rabbit.

According to Amelia Simmons' recipes, the colonial American homemaker likewise used fruits and vegetables. The list of vegetables encompassed potatoes, onions, beets, parsnips, carrots, garlic, asparagus, radishes, artichokes, horse radish, cucumbers, lettuce, cabbage, and cauliflower. In addition, a number of types of both peas and beans were mentioned. The latter included such varieties as Clabbord,

Windsor, Frost, Six Weeks, Lazy English, Horse Bean, Small White Bean, and the Calivance with a black eye. The varieties of peas mentioned are Crown Imperial, Crown Pea, Nondeheval, Early Carlton, Marrow Fat, Sugar Pea, and Spanish Manratto. The fruits enumerated are pears, apples, currants, raspberries, quinces, strawberries, mulberries, gooseberries, plums, peaches, apricots, cherries, blackberries, watermelon, and muskmelon. Madeira, Lisbon, and Malaga grapes are among the fruits. Mrs. Simmons suggests that fruits be used for jelly, preserves, and pies, and in beverages. Eggs, milk, and cream are freely used in custards, baked puddings, cakes, and cookies.

Many current meal planning instructions emphasize the use of whole cereals. In 1796, the milling process did not remove the bran and the germ of the grain. As whole grain cereals were the only type known, it was assumed that people would use them. Neither oranges nor tomatoes, which today are considered essential, are mentioned in *American Cookery*. The former were not commonly available, and the latter were considered poisonous by many.

COOK BOOKS BY ORGANIZATIONS

American Cookery started a vogue for the printing of recipes by Americans. The *Bibliography of American Cookery Books 1742–1860* lists seventy-six titles published during the first half of the nineteenth century. Of these, the majority were prepared by women and were the work of one person. In the middle of that century, a unique change in editorship occurred; the custom of compiling recipes contributed by the members of women's organizations was introduced. Cook books became a popular method of raising funds and propagandizing objectives for organizations. These editions, indicative of women's endeavors to become an effective social force in the affairs of the nation, are another milestone in the development of cookery literature in the United States.

Although many crusades were initiated by women's groups during this era, *The Woman's Suffrage Cook Book* (11) brings into perspective the crusade for equal suffrage, the outstanding phase of the women's movement associated with the nineteenth century. Featured among the recipes are contributions by Lucretia Mott, Elizabeth Cady Stanton, Susan B. Anthony, and other well known leaders of this campaign.

Organizations with activities directed towards solution of the equal suffrage problem are said to be as American as the Fourth of July; however, historical records indicate the movement antedates this memorable day. As early as 1766, during the period when the colonial women were as deeply stirred as the men over the constant injustice and growing tyranny of the British government, several women met at the home of a community patriot, Ephraim Bowen (12). After spending the entire day discussing current affairs and spinning for public benefit, the group organized as Daughters of Revolution. Similar organizations were developed in New England and in the southern colonies. Although no cook book is known to have been sponsored by these groups, the Daughters of Revolution were important in the development of cook books compiled by clubs, for they pioneered in the woman's club movement which later became responsible for innumerable cookery publications.

Throughout the Revolutionary War, the role which women had assumed was sensationally publicized. When the conflict was over, a woman, Clementine Reid, editor of the *Virginia Gazette*, Williamsburg, Virginia, was reputed to be the first to publish the Declaration of Independence (13). Women were not content to remain inactive in the affairs of state. When John Adams was attending the Continental Congress in which the Bill of Rights was considered, his wife Abigail tactfully and earnestly urged him to raise women from their subordinate position to one of equality with men (14). Nothing in the Bill of Rights finally added as amendments to the Constitution in 1791 indicates that John Adams and his colleagues heeded Abigail's admonition. Women were given no status in the new republic. This was unsatisfactory to many capable women who had been leaders during the war and were anxious to continue a program in public affairs. However, there was need for an organization which could foster concerted action in the promotion and execution of reform.

FEMALE CENT INSTITUTION

With the founding of the Female Cent Institution, the opportunity to develop an organization of and for women came in disguise. The Men's Missionary Society, conceived by Lyman Beecher, had been organized to further the program of the church (15). Customarily the women had been excluded. However, they did not wholly accept this discrimination. They appeased their desire by the formation of a counter group, The Female Cent Institution.

When first organized, among the chief objectives of the Female Cent Institution was the support of the activities of the Men's Missionary Society. One of the policies which gained great favor for this group in the eyes of the clergy was the requirement that each member pay a cent a week into the treasury. This, in turn, was given to the treasurer of the men's society. The organization grew rapidly. Soon, the members were not confining their discussions to the problems of the church. The Female Cent Institution demonstrated to women the power of cooperation and organization, and it became an underground movement for sponsoring women's rights (16). Thus, the equal suffrage movement, which later stimulated cook book publication, had its inception.

Today culinary literature comes from the press compiled or sponsored by innumerable women's organization, societies, clubs, groups of women, and individuals. Varied as the titles may be, each edition provides some insight into the American way of life. Like the work of William Parks, E. Smith, and Amelia Simmons, each title may be appraised in the light of a historical frame of reference. Our contemporary culture is the product of a social process in which the ideals of one generation are the basis for many of the policies of the next.

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Recipe for Better Writing

Because a laboratory report is basically the simplest type of writing (mostly expository), it should be the clearest and easiest to read. Unfortunately it often is not, according to John L. Kent, Chief, Editorial Bureau, Consolidated Engineering Corp., Pasadena.

In the August 1955 issue of the *A.C.I.L.* (American Council of Independent Laboratories, Inc.) *Bulletin*, Mr. Kent states that the major fault of many laboratory reports is that they are unnecessarily long—because they haven't been planned.

The first rule of writing anything is to ask: "Who is going to read this?" After you have "placed" your reader, you can proceed on the proper level to make him understand what you are about to write.

The laboratory report is a specialized form of writing whose order should be apparent through section headings, sub-headings, and other means. Planning the order is part mental, part written. Make an outline. Unless you have such an outline, your information will not be presented as well as it could be.

Long and involved sentences give technically-trained people more trouble than any other single factor. Because of their training and experience, they are generally precise. Thus when they write, they qualify each idea with limiting phrases so that long sentences result. Shortening sentences will help readability and prevent grammatical errors.

Every writer's presentation, too, is improved by substituting the more common (usually Anglo-Saxon) words for the longer (often Latin-derived) ones. The laboratory report writer must necessarily use long scientific words. Because he cannot avoid these, he can best "lighten" his sentences by using all the easy words he can elsewhere. Write simply and directly. Avoid the anonymous, "it is believed." Why not, "We believe"?

Critical examination of laboratory reports indicates that many have not gone through any editing process. This failing can be corrected only by a more critical attitude on the part of laboratory management. The report should not misrepresent the care that has gone into the work, or the desire of the management to do a good job.

The formula for good laboratory reports can be summed up in four directives: (a) plan the report; (b) consider your reader; (c) write short sentences, and (d) be critical.

Dental Caries Experience of Montana Students[1]

LURA M. ODLAND, Ph.D., LOUISE PAGE, and STANLEY T. DOHRMAN, D.D.S., F.A.C.D.[2]

Department of Home Economics Research, Montana Agricultural Experiment Station, Bozeman; Human Nutrition Research Branch, U. S. Department of Agriculture, Washington, D. C.; and Great Falls, Montana

DATA ON dental caries experience for population groups in Montana are limited to reports on Naval recruits in 1934 and Army selectees in 1943 (1). No studies have been reported on the influence of environmental or dietary factors on the dental involvement of population groups in the state.

With the recent emphasis on relationships between fluoride content of the water supplies and dental caries experience for human beings, it was considered feasible to study this factor in Montana where water supplies vary in natural fluoride content from 0.0 to 1.7 p.p.m.

Epidemiologic data are reported here for two surveys with native-born and -reared Montana students serving as subjects: (a) a pilot study with entering freshman students at Montana State College from many areas within the state; and (b) a more critical survey of fifteen-year-old boys and girls in the Bozeman and Great Falls areas, where water supplies contained an average of 0.0 and 0.9 p.p.m. fluoride, respectively.

In addition to dental examinations, other indices of nutriture evaluation included seven-day dietary records, biochemical tests on the blood levels of certain nutrients and the enzyme, serum alkaline phosphatase, and extensive physical examinations. These data were obtained for further information on the possible influences of dietary and environmental conditions on physical health and well-being.

METHODS

Freshmen Pilot Study

The freshman survey was conducted in the fall of 1950 to provide general information on the nutriture of 294 Montana-born and -reared students, 124 women and 170 men, 16 to 28 years of age. When the data were tabulated according to the fluoride level of the water supply in the area in which the student lived, only those students who had lived in one or more areas which would have provided similar fluoride exposure were included. By appointment, the freshmen were examined by ten accredited Bozeman dentists working together in the college research laboratories, with predental students at the college as assistants. Preliminary discussions and examinations helped to assure uniformity of techniques in observing and recording the findings.

High School Students

The following year a more intensive survey of the fifteen-year-old high school students was conducted in the areas of Bozeman and Great Falls. The fluoride content of the Bozeman water was negligible; for

[1] This study was a part of the Western Regional Research Project on the Nutritional Status of Population Groups in Selected Areas of Montana, conducted with the cooperation of the Montana Agricultural Experiment Station. It was financed in part from funds appropriated under the Research and Marketing Act of 1946. Contribution from Montana State College, Agriculture Experiment Station, Paper No. 342, Journal Series. Presented at the annual meeting of the Montana Dental Association in Great Falls, on May 8, 1954. Received for publication May 18, 1955.

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Also cooperating in the planning and executing of these surveys were: Montana Dental Association, Montana Board of Health, Montana Department of Public Instruction, and Montana State College Extension Service. Appreciation is also expressed to Dr. Norman F. Gerrie, Regional Dental Consultant, U.S. Public Health Service, for advice in preparing the manuscript.

Great Falls, it was approximately 0.9 p.p.m., as reported by municipal and state laboratories. Previous successive analyses over a period of several years had indicated slight seasonal fluctuations in the fluoride level in the water in the two areas. During December and January, the fluoride in the water tended to increase to 0.1 p.p.m. in Bozeman, and to 1.1 in Great Falls. In summer, in Bozeman, it remained negligible, while that of Great Falls temporarily decreased around June from an average of 0.9 p.p.m. to 0.6. There appeared to be only minor variations in yearly average fluoride content.

These areas were selected because it would be possible to find a sample of approximately fifty boys and fifty girls in each area who had been consuming water from the same supply source for the first twelve years of life (the period of maximum tooth development), which was essentially throughout life for the fifteen-year olds.

Through the generous cooperation of the State Department of Public Instruction and of public, private, and parochial school officials, names of fifteen-year-old students born in Bozeman and Great Falls were obtained. Also, school records for several years were checked to obtain names of students who might not be currently enrolled. Students with systemic disorders were eliminated.

In Bozeman, all students contacted who fulfilled the residence requirements were included in the survey. To complete the data for a minimum of 100 students from the area, 10 additional students were selected whose homes were located outside the city limits. Because these students were not consuming water from the municipal system, samples from the private water supplies were analyzed and were found to be of negligible fluoride content. Those who had consumed water from these sources throughout life were included in the Bozeman sample.

Although the total population of Great Falls was greater than that of Bozeman, the number of students who had resided in the area for the first fifteen years of life approximated the desired number of subjects. No special sampling procedures were required.

Dentists in both cities conducted the examinations of these high school students in their offices so that data from bite-wing radiographs could be included. Information was also obtained on the number of yearly visits to the dentist, incidence of fluorosis, malocclusion, and tooth-brushing habits. Again, the dentists in the two areas worked together in preliminary discussions of the exact technique to be used in identifying caries experience, and after the survey field work, one dentist reviewed all data sheets and films to assure uniformity in reporting.

DMF Scores

DMF scores, representing the summation of the number of decayed, missing, and filled permanent teeth, were calculated for these students as indicated by visual examination with a mouth mirror and explorers. A tooth was counted as "decayed" when there was clinical evidence of caries. Pre-carious pits and fissures were not listed as decayed teeth. A tooth with a history of decay was listed under only one item: if a tooth had been previously filled and was decayed at the time of the examination, the tooth was scored as either "decayed" or "requiring extraction." In the latter case, the tooth was counted as "missing." Unerupted teeth were not tabulated as "missing."

DMF surfaces were also reported for the fifteen-year-old subjects on the basis of five possible surfaces per tooth, including the same counts for incisors and molars.

Radiograph findings were indicated as tooth involvements in addition to those observed by visual examination.

FINDINGS AND DISCUSSION

Mean DMF scores for 294 native-born and -reared Montana State College freshmen are tabulated by age and sex in Table 1. The mean DMF score for all freshmen was 13.4, with a mean DMF score of 15.2 for the women and 12.0 for the men. In similar studies with college freshmen, mean DMF scores have been reported as follows: Oregon State College, 14.1 (2); Utah State Agricultural College, 13.2 (3); and the University of Idaho, 10.4 (4). In the Oregon, Utah, and Idaho surveys, the mean DMF scores for

TABLE 1

Mean DMF scores for native-born and -reared Montana State College freshmen, tabulated by age and sex

AGE	SEX	NUMBER OF SUBJECTS	MEAN DMF TEETH			
			Decayed	Missing	Filled	Total DMF
16	men	1	7.0	3.0	4.0	14.0
	women	1	13.0	4.0	4.0	21.0
	men and women	2	10.0	3.5	4.0	17.5
17	men	30	2.1	3.1	8.4	13.6
	women	23	1.9	2.6	9.5	14.0
	men and women	53	2.0	2.9	8.9	13.8
18	men	98	2.5	3.0	6.1	11.6
	women	88	2.4	3.1	9.7	15.2
	men and women	186	2.4	3.0	7.8	13.3
19	men	15	2.6	2.5	5.7	10.9
	women	8	2.1	4.0	11.6	17.7
	men and women	23	2.4	3.0	7.8	13.3
20+	men	26	1.9	4.0	6.3	12.2
	women	4	0.0	3.3	12.0	15.3
	men and women	30	1.7	3.9	7.1	12.6
All ages	men	170	2.3	3.1	6.5	12.0
	women	124	2.3	3.0	9.8	15.2
	men and women	294	2.3	3.1	7.9	13.4

the women were slightly higher than for the men, and some increase in DMF scores was noted with increasing age. With increasing age, the DMF scores of the Montana freshmen appeared to decrease slightly; however, the age differences were not statistically significant.

A sex difference was apparent, with the women having a larger proportion of filled teeth. However, they had fewer teeth needing to be extracted and fewer open cavities than the men. In the Oregon, Utah, and Idaho studies, similar observations were reported.

A mean DMF score of 6.0 was reported for Montana naval recruits in 1934, and for Montana selectees in 1943, the mean DMF score was reported as 8.84 (1). The freshman men's mean DMF score of 12.0 in 1950 might further indicate a trend toward increasing DMF scores for young adult men in Montana.

A tabulation of DMF scores for 282 Montana-born and -reared college freshmen, classified in nine groups according to the fluoride content of the home water supply (Table 2), indicates a consistent decrease in mean DMF scores from 15.6 to 5.7 with the increasing fluoride content of the water supply from 0.0 to 1.7 p.p.m., and with a slight increase in the mean DMF scores above this fluoride level. However, the number of subjects in the higher fluoride groups was considerably less. Twelve students were not included in the fluoride classifications either because data were not available on the fluoride content of the home water supplies, or the students had lived in two or more areas with differences in fluoride content of the water supplies.

TABLE 2

Mean DMF scores for native-born and -reared Montana State College freshmen, classified by sex and fluoride content of the home water supply

FLUORIDE OF HOME WATER SUPPLY	WOMEN		MEN		ALL SUBJECTS	
	Frequency	Mean DMF	Frequency	Mean DMF	Frequency	Mean DMF
p.p.m.						
0–0.2	63	17.6 (32–6)*	74	14.0 (31–3)	137	15.6 (32–3)
0.3–0.5	38	14.4 (27–2)	40	13.0 (24–2)	78	13.7 (27–2)
0.6–0.8	10	10.6 (17–6)	10	9.1 (21–3)	20	9.8 (21–3)
0.9–1.1	8	9.4 (21–2)	18	8.7 (16–2)	26	8.9 (21–2)
1.2–1.7	0	—	7	5.7 (15–2)	7	5.7 (15–2)
1.8–2.6	2	7.0 (10–4)	4	7.2 (16–4)	6	7.2 (16–4)
2.7–3.5	2	9.0 (10–8)	3	5.7 (12–1)	5	7.0 (12–1)
3.6+	—	—	3	8.0 (12–6)	3	8.0 (12–6)

* Range.

These results are somewhat higher than those reported by Porter and Woods (4) for University of Idaho freshmen who had consumed water with 0.0 to above 0.9 p.p.m. fluoride. However, both studies indicate the consistent downward trend in DMF scores as the fluoride content of the water supplies increased from 0.0 to above 0.9 p.p.m.

Wilcox, Greenwood, and Galloway (3) reported mean DMF scores of 12.1 to 14.8 for 614 students from four Utah counties with 0.0 to 0.45 p.p.m. fluoride in the water supplies. These means are slightly lower than the means for the Montana students of 15.6 for the 0.0 to 0.2 p.p.m. fluoride group, and of 13.7 for the 0.3 to 0.5 p.p.m. fluoride group.

The majority of the Montana freshmen resided in areas of lower fluoride content in the water supply; also most were seventeen to eighteen years old, within the total age range of sixteen to twenty-eight years, so that any relationships between the fluoride level of the water supply and age were not apparent.

Striking differences were observed for DMF teeth and DMF surfaces among the fifteen-year-old students in the Bozeman (0.0 p.p.m. fluoride) and Great Falls (0.9 p.p.m. fluoride) areas; the mean DMF teeth for the Bozeman students was 12.2, for the Great Falls students, 6.3 (Table 3). Mean DMF surface counts emphasized this area difference with the mean DMF surfaces of 23.2 for the Bozeman students and 11.4 for the Great Falls students. Also, in the classifications of filled teeth, teeth with cavities, and carious surfaces, the Bozeman means were approximately double those for Great Falls. Only in the classification of missing teeth was the Great Falls mean of 0.7 greater than that for Bozeman (0.5).

These comparative data for the two areas with

TABLE 3

Dental caries experience of fifteen-year-old native-born and -reared high school students in two areas of Montana

SEX	NUMBER OF SUBJECTS	TEETH WITH CAVITIES	CARIOUS SURFACES	TEETH MISSING	TEETH FILLED	DMF TEETH	DMF SURFACES
Bozeman							
Girls	56	6.6 (20–0)*	8.7 (31–0)	0.5 (4–0)	6.1 (17–0)	13.2 (26–1)	23.8 (80–1)
Boys	56	5.6 (20–0)	11.3 (44–0)	0.4 (6–0)	5.0 (15–0)	11.1 (22–0)	22.7 (62–0)
All subjects	112	6.1 (20–0)	10.0 (44–0)	0.5 (6–0)	5.5 (17–0)	12.2 (26–0)	23.2 (80–0)
Great Falls							
Girls	56	3.2 (13–0)	4.5 (23–0)	0.7 (6–0)	3.0 (14–0)	6.9 (20–0)	11.9 (51–0)
Boys	54	2.7 (14–0)	3.5 (23–0)	0.7 (10–0)	2.3 (13–0)	5.6 (23–0)	10.8 (70–0)
All subjects	110	3.0 (14–0)	4.0 (23–0)	0.7 (10–0)	2.6 (14–0)	6.3 (23–0)	11.4 (70–0)

* Range.

0.0 and 0.9 p.p.m. fluoride, respectively, are similar to those reported for similar age groups in other areas with comparable fluoride levels of the water supplies. McKay (5) compared a mean DMF score of 2.0 for 97, fifteen-, sixteen-, and seventeen-year olds in Salida, Colorado (1.3 p.p.m. fluoride in the water supply), with a mean DMF score of 11.2 for a similar group in Madison, Wisconsin (0.0 p.p.m. fluoride).

Dean *et al.* (6) have reported for Chicago suburban children, twelve to fourteen years of age, that dental caries experience rates in Maywood, Aurora, and Joliet, where public water supplies contain 1.2 to 1.3 p.p.m. fluoride, were 2.6, 2.8, and 3.2 respectively. For the communities of Evanston, Oak Park, and Waukegan, using fluoride-free water, the dental caries experience rates were 6.7, 7.2, and 8.1, respectively.

In these comparisons, the DMF scores from the areas of 1.2 to 1.3 p.p.m. fluoride are somewhat lower than the mean DMF scores for the students from the Great Falls area with 0.9 p.p.m. fluoride. The slightly higher fluoride content of the water of the other cities, the inclusion of radiograph findings for the Montana data, and the seasonal fluctuations in the fluoride level of the Great Falls water may be, in part, responsible for the difference.

Wilcox *et al.* (7) reported 11.5 DMF teeth for children eleven to sixteen years old from an area where the fluoride content of the water supply averaged 0.15 p.p.m. Reports in the literature are generally quite similar for DMF scores for adolescents consuming water with little or no fluoride.

A mean DMF score of 4.5 was reported for 467, fifteen-year-old students in Aurora, Illinois, which had a water fluoride level of 1.2 p.p.m. (8). In the concurrent studies of two Michigan communities, where fluoride levels of the water supply were negligible, DMF scores of fifteen-year-olds were reported as 12.5 for 1511 Grand Rapids students and 12.8 for 292 Muskegan students (8).

In both Bozeman and Great Falls, the mean DMF teeth were somewhat higher for the girls than for the boys, with 13.2 DMF teeth for Bozeman girls as compared with 11.1 DMF teeth for the boys, and 6.9 DMF teeth for Great Falls girls as compared with 5.6 DMF teeth for the boys. The individual classifications of the teeth as decayed, missing, or filled, indicated that the girls were consistently higher in all classifications in both areas. Two factors may be involved. First, the girls' teeth may have erupted sooner, with the result that the difference may have been attributable to the posteruptive age of the teeth, and second, the records of dietary intake indicated that in practically all nutrients the boys' diets were superior. Within the sex classification, data on nutrient intake were remarkably similar for the girls and for the boys from the two areas.

Decayed teeth may be taken as a very rough reflection of the dental attention needed. Comparisons for the Bozeman and Great Falls students indicated that approximately twice as much dental care was needed in Bozeman as in Great Falls. Also, in Bozeman, the mean number of surfaces needing attention was ten; whereas, in Great Falls, a mean of four was found.

Approximately 85 per cent of all students received referral letters on dental conditions, and of these, approximately one-fourth were classified as urgent. Forty-four of the Bozeman, and 50 of the Great Falls students had been to the dentist within six months of the survey. Approximately 75 per cent in both areas had had dental attention within the year prior to the survey.

Charting the distribution of DMF scores for the Bozeman and Great Falls students emphasized the difference in the two areas. The distributions of scores for DMF teeth in the Bozeman area indicated a fairly normal distribution of the students, with a mean of 12.2 and a range of 0 to 26 DMF teeth; whereas, for Great Falls, the mean DMF score was 6.3 with a range extending from 0 to 23. These distribution patterns were re-emphasized when the DMF surface scores were charted.

The mean DMF score for Montana State College freshmen consuming water containing 0 to 0.2 p.p.m. fluoride was 15.6 as compared with 12.2 for fifteen-year-olds from Bozeman. Freshmen coming from areas supplied with water of 0.9 to 1.1 p.p.m. of fluoride had a mean DMF score of 8.9 as compared with the Great Falls fifteen-year-olds of 6.3. Considering a mean age difference of approximately three years, these figures are remarkably similar. It might be expected that with this difference in age, the older students would have slightly higher DMF scores.

In addition to DMF teeth observed visually, the Bozeman students had a mean of 2.5 teeth with a mean of 3.6 carious surfaces requiring fillings, discernible only by radiograph. For the Great Falls students, DMF teeth discernible only by radiograph, averaged 0.8 with 1.2 surfaces. For both areas, 18 per cent of the DMF teeth and 14 per cent of the DMF surfaces were disclosed by the radiograph findings. In similar studies in Oregon (2) and Utah (7), 25 per cent of carious surfaces and 30 per cent of DMF surfaces respectively were detected by radiographs.

A "slight degree" of fluorosis was observed for two of the Great Falls students and a "moderate" degree for one Bozeman student. Heyroth (9) has indicated that ". . . very mild, difficultly detectable alterations in the enamel may be found in about 10 per cent of the children using water with 1 p.p.m." Fluorosis has been observed by dentists in some areas of Montana, particularly in the southwestern section where the fluoride content of the water has been reported as upwards to 16 p.p.m. (10).

The one Bozeman student with moderate fluorosis was born and reared in the city and had not been outside of the area for any extended time. For this student no dietary pattern was evident to indicate unusual fluoride intake at any time. The DMF score for the student was 1. The DMF scores for the Great Falls students with a slight degree of fluorosis were 11 and 5. However, in both areas, the index of fluorosis would be considered as negative (11, 12).

Tooth-brushing habits, as reported by the Great Falls and Bozeman students, were similar, with 41 per cent indicating that they brush their teeth once a day, after a meal or before bed; 36 per cent, twice a day; and 7 per cent three times a day, while the rest indicated irregular tooth brushing. Thirty-seven Bozeman students were considered as having poor oral hygiene as compared with sixteen of the Great Falls students. Gum conditions were considered as "poor" for ten Bozeman students and for seven in Great Falls. Malocclusion was reported for thirty students in Bozeman and thirty-three in Great Falls with little difference in sex distribution.

Carbohydrate intake, as such, was not strongly related to DMF scores in either city; however, the dietary information did not define the amount of refined carbohydrate consumed.

It has been suggested that fluorides, in a possible anti-enzyme role, might be antagonistic to the efficient utilization of ascorbic acid. Although the Great Fall girls had slightly lower serum ascorbic acid levels (1.1 mg. per 100 ml.) than those in Bozeman (1.4 mg.), their calculated ascorbic acid intake was lower in Great Falls (55 mg. per day) than in Bozeman (69 mg.). Blood serum and dietary levels of ascorbic acid were similar for the Bozeman and Great Falls boys. These data do not indicate that fluorides interfered with ascorbic acid metabolism.

SUMMARY

Freshmen students at Montana State College had a mean of 13.4 DMF teeth with a mean DMF score of 15.2 for the 124 women, and 12.0 for 170 men. Classifying the freshmen according to the fluoride content of the home water supplies indicated a consistent decrease from 15.6 to 5.7 in mean DMF scores as the fluoride content of the home water supply increased from 0.0 to 1.7 p.p.m.

DMF scores for fifteen-year-old boys and girls in Bozeman and Great Falls, with 0.0 and 0.9 p.p.m. fluoride respectively in the water supplies, were 12.2 in the former, and 6.3 in the latter. In the classifications of DMF teeth and DMF surfaces, as well as for the individual components of decayed or filled teeth, the Bozeman scores were consistently double those for the Great Falls area.

In the studies of both freshmen and fifteen-year-old students, the DMF scores of the girls were slightly higher than those of the boys.

Approximately 18 per cent of the DMF teeth and 14 per cent of the DMF surfaces of the fifteen-year-old students in Great Falls and Bozeman were not found by visual observation, but rather by bite-wing radiographs.

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Solid Food for Very Young Babies?

Sometimes babies are fed cereal and many other new foods as early as one month. Lois Murphy, Ph.D., The Menninger Foundation, Topeka, Kansas, asks: "How does the baby feel about this? Is he having to make too many adjustments, too quickly?" In speaking before the 38th Annual Meeting of The American Dietetic Association in St. Louis in October, Dr. Murphy cautioned that babies sometimes need time to learn to like a new food, and too many too early may be disturbing to some.

Effect of Nonfat Dry Milk Solids on Growth and Nutriture of Children[1]

MARGARET C. MOORE, GRACE A. GOLDSMITH, M.D., ROY E. BUTLER, M.D., MARION H. WOLF, and MURPHY P. MARTIN, M.D.[2]

Louisiana Department of Health, Tulane University School of Medicine; U. S. Public Health Service; and *St. Martin Parish Health Unit*

Mass feeding of children in a school lunch program has two distinct potentialities: it affords both an opportunity to improve the physical status of many children through improved nutrition and to teach children better and more healthful eating habits. This study is concerned with the effect of the addition of nonfat dry milk solids on the physical growth and nutritional status of children who had been receiving relatively little milk in their diets.

Numerous studies have shown that the diets of Louisiana children are low in milk (1, 2). Increased use in the school lunch of nonfat dry milk solids offers an easy and inexpensive way to improve such diets. Furthermore, this addition could reach nearly all children of school age. When this study was initiated, little was known either about the amount of nonfat dry milk solids which could be incorporated in the school lunch over a long period of time or the amount that might influence growth and/or nutritional status. It was recognized that school lunches constitute only 24 per cent of the child's weekly food and that they are available for only three-fourths of the year, even when the child's school attendance is perfect.

To investigate the use of nonfat dry milk in the mass feeding of school children, two schools were selected in St. Martin Parish (County), Louisiana, a milk-poor, rural area, where sugar cane, hot peppers, and certain market vegetables were the principal farm crops. The schools were 8 mi. apart and were similar in scholastic rating, environment, and lunchroom facilities. Each received the same surplus commodities in amounts proportional to the lunch program. Insufficient fresh milk was available to permit serving it as a beverage in either school. One school was situated across the road from a combination bakery and grocery where the children could get lunches, a fact which interfered with regular attendance in the lunchroom. This became the control school (Cecelia). The other school (Breaux Bridge) received the nonfat dry milk solids provided by the Department of Agriculture.

In February, 1947, 411 children in the two schools were examined in order to select experimental groups. Children in the school which was to receive milk solids were paired with children from the control school on the basis of sex, age, certain physical measurements (weight, height, pelvic width, and calf circumference), nutritional status, and eating habits. Selection of children for pairs was difficult, due not only to individual variations, but also to unexpected differences in age distribution in the two schools. Finally, 86 pairs of children were selected within the eight- to eleven-and-one-half-year age range. These children were re-examined in November, 1947, and again in April, 1948. Seventy-two pairs of children were followed throughout the study, 35 pairs of boys and 37 pairs of girls. The school in which the children received milk solids has been designated School A; the other, or control, School B.

During this study, nonfat dry milk solids equivalent to approximately 0.67 pt. (9.1 fluid oz.) per day per child were used in School A. Reconstituted, this milk was served on an average of twice a week as a beverage[3]; the balance was used in cooking. The feeding of milk was instituted on the day after

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[2] The cooperation and helpfulness of the St. Martin Parish School Board, A. J. Cormier and his teachers of Breaux Bridge, as well as that of Robert Angell of Cecelia, are gratefully acknowledged.

[3] The beverage milk was mixed double strength in 5-gal. electric churns early in the morning and stored in the coldest part of the refrigerator; at noon it was diluted with ice water and served immediately. Occasionally a fruit flavor or a chocolate sirup was added. The bacterial counts, checked at intervals, were considerably below 10,000 organisms per cubic centimeter.

TABLE 1

Nutrient intake of children in Schools A and B calculated from grocery inventories in terms of nutrients per lunch per child for the school year 1947–48

NUTRIENT	SCHOOL A		SCHOOL B—TOTAL INTAKE
	Total intake including nonfat dry milk solids	Intake excluding nonfat milk solids	
Calories	856	756	566
Protein (gm.)	36	26	21
Animal protein (gm.)	24	14	13
Calcium (mg.)	627	283	508†
Phosphorus (mg.)	642	371	348
Iron (mg.)	6.2	6.0	7.0
Vitamin A (I.U.)	1930*	1930*	1110
Thiamine (mg.)	0.49	0.39	0.40
Riboflavin (mg.)	0.88	0.38	0.49
Niacin (mg.)	3.49	3.18	3.30
Ascorbic acid (mg.)	87*	87	52

* No nutritive value was calculated for vitamin A in the dried milk. Also, since much of the milk was used in cooking, ascorbic acid value was disregarded.

† School B continued to use some evaporated milk in cooking and often served turnip greens which have a high calcium content.

the first examination of the children in School A. No attempt was made at any time to control the eating habits of any child, although teachers in this experimental school noted the milk consumption when it was served as a beverage. It was acceptable to all the children.

DIETARY DATA

Soon after the first physical examination, the schools and the local health department collaborated in obtaining dietary histories from children in the fifth grade and above in both schools. Food intake for one week was recorded by 681 children during February-March, 1947. Eating habits were similar to those reported in previous dietary surveys of school children in Louisiana (1, 2). Except in rare instances, Louisiana children are likely to eat foods providing enough calories, protein, and vitamin A. Intakes of calcium and the B vitamins are often low, and ascorbic acid intake is variable.

The dietary recall records of the 144 children chosen for this study were tabulated with respect to food groups and evaluated qualitatively. These records indicated that the children in School A (experimental) ate a somewhat better selection of foods than those in School B (control). Closer examination of the records showed that the foods eaten at home were essentially the same in the two groups, but that those eaten in the school lunchroom differed. More accurate evaluation of the nutritive values of the lunches served in the two schools was therefore undertaken. Grocery inventories, food purchases, surplus commodities, and produce received from the children's families in payment for

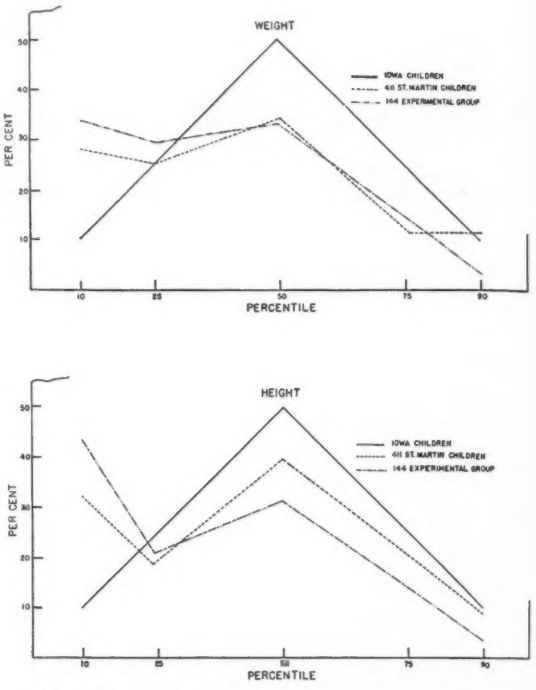

FIG. 1. *Percentage distribution of height and weight of 411 Louisiana children and an experimental group of 144 children compared with Iowa Children classified by Stuart and Meredith (4) standards.*

lunches were compiled separately for each school. These data were converted into pounds of food, as purchased, and divided by the number of lunches served in each school for the entire year.[4]

The nutritive values of the average lunch served in each school were then calculated using tables from Agriculture Handbook No. 8 (3). Except for the contribution of the nonfat dry milk solids, the two schools served lunches that were similar in calculated nutritive value despite the apparent qualitative superiority of those in School A (Table 1).

ANTHROPOMETRIC DATA

The height and weight of the 411 children examined in the two schools in February, 1947, and the height and weight of the 144 children paired for this study were compared with figures for Iowa children of similar age and sex groups as given in the tables of Meredith and Stewart (4).

As shown in Figure 1, these Louisiana children, including those in the experimental group, tended to be light and small for their age in comparison with Iowa children. Examination of the surnames of the St. Martin Parish children suggested that most were of French origin, which is not surprising

[4] No correction was applied for waste. On two occasions at the beginning and at the end of the experiment, waste was weighed or measured. The proportional waste in the two schools was essentially the same.

TABLE 2

Average original measurements, average gains, and differences in average gains in physical measurements of 72 children who received nonfat dry milk solids, with 72 children who received no added milk solids

PHYSICAL MEASUREMENT	AVERAGE MEASUREMENTS FIRST EXAMINATION		AVERAGE GAINS LAST EXAMINATION		DIFFERENCE IN AVERAGE GAINS
	School A	School B	School A	School B	
All Children					
Weight (lb.)	66.1	66.2	9.23	7.56	1.67
Height (cm.)	135.9	135.6	6.86	6.19	0.67
Pelvic width (cm.)	21.3	21.6	0.95	0.77	0.18
Calf circumference (cm.)	26.8	26.9	1.76	1.40	0.36
Boys					
Weight (lb.)	67.9	67.6	8.97	6.71	2.26*
Height (cm.)	136.1	136.3	6.25	5.83	0.42
Pelvic width (cm.)	21.4	21.7	0.80	0.67	0.13
Calf circumference (cm.)	26.9	26.9	1.75	1.17	0.58
Girls					
Weight (lb.)	64.5	64.9	9.46	8.38	1.08
Height (cm.)	135.7	134.9	7.43	6.51	0.92
Pelvic width (cm.)	21.2	21.5	1.09	0.86	0.23
Calf circumference (cm.)	26.8	26.8	1.77	1.62	0.15

* Significant at 5% level.

since the area was settled by French Acadians. The genetic influence may explain, in part, the differences between these children and those of Iowa. The influence of nutrition on these findings is unknown. Children of farmers constituted nearly 70 per cent of our group.

The children in the experimental group were examined three times. Accordingly, data on growth and nutritional assessment were studied both for the total period of fourteen months and also for the two shorter periods, February to November as well as November to April. Mean gains in weight, height, pelvic width, and calf circumference followed the same pattern in the two short periods as in the total period. Since the mean gains in the entire fourteen-month period were relatively small, only the data for the total period are presented. Table 2 gives the averages of the original measurements which served as a basis for selecting the pairs of subjects, as well as average increases in weight, height, pelvic width, and calf circumference for the total group in each school and for girls and boys separately. Differences in the average gains between these same groups are also included. The differences were of a small order, but they were consistently in favor of School A where the children had received lunches to which the milk solids had been added. When data on average gains of the total groups were broken down by sex, the average weight gain of the boys in School A was greater than that of the girls. Statistically, only the mean weight gain for the boys in School A when compared with the mean weight gain of the boys in School B was significant (5 per cent level).

The pairs of children were also studied, each child being compared with his pair-mate with reference to changes in physical measurements for the total period. Increases in height, weight, pelvic width, and calf circumference occurred more often and were of greater magnitude in children of School A than in those of School B. Forty-six children in School A gained more weight than their pair-mates in School B, while 26 gained less. Forty-three children in School A showed a greater increase in height than their pair-mates in School B; in 27, the reverse was true; 2 pairs grew identically. Increases in pelvic width for 36 children in School A were greater than in School B; the reverse was true for 24 children; 12 pairs gained identically. There were greater increases in calf circumference for 45 children in School A as compared to School B; the reverse was true in 23 instances, while 4 pairs of children showed identical increase. In general, the girls exhibited wider variations in physical measurements within the pairs than the boys. Several girls gave evidence of maturation at the last examination, a fact which may explain the variations.

NUTRITIONAL DATA

In judging the nutritional status of the children, a check sheet developed at the Tulane University School of Medicine was used. Thirty-two physical findings often associated with poor nutrition entered into the assessment.[5] Abnormalities related to the hair, eyes, lips, tongue, gums, and skin were checked by the same workers at each examination. Most of the findings were minimal in degree, and there was considerable variation in incidence at each of the three examinations. The most constant findings were thickening or injection of the conjunctivae, and swelling, recession, bleeding, and/or redness of the gums. The relationship of conjunctival thickening to nutritional state is highly questionable, while injection of the conjunctiva can occur as a result of many non-nutritional factors. It is well recognized that gum changes depend on oral hygiene as well as on nutritional factors. Changes in the lips, such as dryness and chapping, and slight hypertrophy or atrophy of the lingual papillae were observed in a

[5] HAIR—dry, starey; EYES—circumcorneal injection, conjunctival thickening pigmentation; MOUTH—*Lips*, denudation, fissuring, dryness, wrinkled; *Tongue:* hypertrophic papillae, atrophic papillae, pallor, redness, magenta color; *Gums:* swelling, recession, bleeding, redness; SKIN—*Face:* acne, nasolabial fold dermatitis, milia, permanent goose flesh, scaliness, pallor, keratosis follicularis; *Body:* acne, keratosis follicularis, milia, permanent goose flesh, scaliness, pigmentation, thickening, marmoraceous arms and thighs.

TABLE 3

Incidence of findings suggestive of malnutrition without regard for type or severity, in 72 pairs of children

EXAMINATION	AVERAGE NUMBER OF SIGNS DETECTED					
	Boys		Girls		All children	
	School A	School B	School A	School B	School A	School B
First	5.1	7.0	8.0	6.8	6.0	6.9
Second	9.3	8.7	8.5	5.7	8.9	7.2
Third	6.7	8.3	6.8	8.3	6.8	8.3

number of children. These findings are perhaps more often indicative of malnutrition than those mentioned above.

When the experimental and control groups were compared for the total period (three examinations) on the basis of total incidence of signs suggestive of malnutrition, without regard for type or severity, the average number of signs ranged from 6.0 to 8.9 per child in School A and from 6.9 to 8.3 per child in School B (Table 3). At first examination, the findings averaged 6.0 and 6.9 per child, respectively, in Schools A and B. The second examination was made during unusually cold weather for Louisiana and children in School A were examined on a colder day than those of School B. Except for the girls in School B, there was an increase in the average number of findings per child in both schools at the second examination. At the third examination, children in School A showed a decrease in the average number of signs suggestive of malnutrition as compared to the second test but the average remained higher than at the original examination. In School B, the average number of signs was greatest at the final examination. There was an increase in the incidence of signs in the total period of study amounting to 0.8 in School A, and 1.4 in School B.

A study of each child's record for continuity of findings which might be associated with malnutrition showed that few children in either group were without some suggestive signs on each occasion. The signs varied considerably in the different examinations. Changes in the eyes and gums were more often persistent than abnormalities in the lips or skin. There were many tongue findings, but they were not consistently found in the same children on all three occasions.

When the progress of each child, with reference with himself was studied for the total experimental period, the children in School A showed a slightly greater improvement with reference to signs suggestive of malnutrition than did those in School B. In School A, 39 per cent had fewer and 38 per cent had more findings; in School B, 31 per cent had fewer and 42 per cent a larger number of findings.

The marked variability of signs in a given child suggests that many of these minor changes are not good evidence of malnutrition. The small differences between the two schools seems insignificant.

TABLE 4

Change in physical findings often associated with malnutrition in each child with reference to himself for total experimental period

SIGNS OF MALNUTRITION	CHILDREN BETTER	CHILDREN WORSE	CHILDREN SAME	PERCENT WITH CONDITIONS IMPROVED
Skin (except nasolabial folds)				
School A	60	38	7	57
School B	14	67	13	15
Lip, tongue, nasolabial fold				
School A	73	41	35	49
School B	54	48	33	40
Eyes				
School A	35	26	38	35
School B	38	32	34	37
Gums				
School A	43	90	40	25
School B	45	72	54	27

In Table 4, abnormal physical findings were grouped under: (a) skin signs (except changes in the nasolabial fold, (b) lip, tongue, and nasolabial fold signs, (c) eyes signs, and (d) gum signs. Findings for each child at the time of the first and the last examination were compared. Incidence of abnormalities of the skin decreased in 57 per cent of the children of School A. Only 15 per cent of the children in School B showed improvement in the skin. This difference is significant at the 5 per cent level. There were no other significant differences between the two schools.

Attendance records of the pairs of children were compared for the two school years, 1946–47 and 1947–48. Absences were approximately the same in the two schools in 1946–47. The following year, the experimental group in School A was absent a total of 70½ days less than in the previous school year, while the pair-mates in School B were absent 80 days more, thus making a total difference of 150½ days between schools. There was no record of any epidemic of communicable disease, such as measles, in School B that did not occur in School A; hence, the improvement, whatever its cause, was notable.

A study of the scholastic records of these children showed no material differences in grades in the two school years.

SUMMARY AND CONCLUSIONS

Growth and nutritional status of 144 children were followed for approximately one and one-half school years. During this time, 72 children were given nonfat dry milk solids in the school lunch. These children were paired with 72 similar children in a neighboring school where no milk solids were used. During the experimental period, the average amount of dry milk solids used daily in the school lunch was equivalent to 9.1 fluid oz. milk. The milk

solids were used in cooking, and two or three times a week were reconstituted and served as a beverage. The reconstituted milk proved acceptable.

At the end of the study, both the boys and girls who had received the milk solids showed slightly greater physical growth (weight, height, pelvic width, and calf circumference) than did those who had not. The differences in gains between the paired children were of a small order but consistently in favor of the group receiving the milk solids. The difference in weight gains in the boys was the only finding of statistical significance.

The incidence of clinical signs often associated with malnutrition was variable within the groups and at the several examinations. The incidence was slightly less in children in the experimental group which received milk solids, at both the first and last examinations. More children improved in the experimental than in the control group, and fewer became worse during the period of study, but differences were very small. When each child was compared with himself for the total period, the same general trend was noted. A statistically significant greater improvement in skin changes often associated with malnutrition was observed in the children who received milk solids.

Increased use of the nonfat dry milk solids in school lunches seems both practical and worth while. It would seem desirable to test the effect of such milk solids in a larger number of children for a longer time.

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Current Educational Problems

"Curriculum adjustments to enable home economics workers to meet the problems posed by the constantly changing situation families face in mid-20th century are a pressing need in colleges training professional home economists. In some institutions, the home economics program is still dominated by the early emphasis on material needs, such as foods and clothing, and by the physical and biological sciences, with but limited time for the human aspects of living of concern to homes and families and, therefore, to home economics professional workers. Child development, family relationships, home management, family economics, sociology, psychology, and economics sometimes receive too little attention. . . .

"The problem of organizing the curriculum so that each year functions most effectively in the life of the student as an individual and family member, and as a future professional worker, has not yet been solved. Several institutions are experimenting with the placement of parts of the curriculum and with community and work experiences to determine how to make each course result in more permanent learning. Some studies of college students have indicated that 50 per cent of the facts learned in one course may be forgotten before the next course. Underlying principles may not be well-enough developed or motivation may not be great enough. A different organization or emphasis in the curriculum or a different combination of work experiences and college instruction may lead to more economical learning. Community and work experiences are being made an important part of the educational program in some colleges. . . .

"Among the problems which are only partially solved in the preparation of professional home economists is the persistent shortage of personnel. Some of the proposed solutions to this problem which are being considered are (1) the return to their profession of homemakers whose children are grown and who have had opportunity for some further up-to-date professional preparation; (2) more part-time employment opportunities for married home economists; (3) the interesting of more men in home economics professions (several home economics staffs now have men members, and men have been enrolling in curriculums preparing for food service, merchandising, interior design, and family counseling); (4) a more specific plan for informing young people of professional opportunities in home economics."

The above excerpts are taken from a chapter entitled "Education in Home Economics" prepared by Beulah I. Coon, U. S. Office of Education, which is included in the recently published book, *Education for the Professions.* This book was organized and edited by Lloyd E. Blauch, Chief of Education in Health Professions, Office of Education, Department of Health, Education, and Welfare, and is available from the Government Printing Office, Washington 25, D. C.

Consumption of Fresh and Evaporated Milk and Dry Milk Solids[1]

CALLA VAN SYCKLE, Ph.D.

Department of Home Economics, State College of Washington Pullman

MILK and its products have a firm place in the food habits of the United States. We are justly proud of the quality of the milk produced and distributed here, and it is perhaps the one item on our menus that all foreign visitors unite in praising. Yet every study of family food consumption indicates that many households do not use enough milk to supply all individuals within the family with amounts considered desirable by nutritionists.

Efforts to increase milk consumption—both to raise producer's income and to improve nutritional welfare—need to be supported by detailed knowledge of family food practices. With this idea in mind, milk was included in a study of household uses of food made in Everett, Washington, in the fall of 1953. Everett is an industrial city on Puget Sound with a population (34,000 in 1950) that is practically 100 per cent white and 88 per cent native-born. The foreign-born are chiefly of Scandinavian and Canadian origin. The 226 households contributing data formed a systematic random sample that satisfactorily represented all eligible households; that is, all those which included at least two persons during the week before the interview, each of whom had had half or more of his meals at home.

TYPES OF MILK USED IN THE HOME

All households used some type of milk, either fresh fluid or processed. Fresh fluid milk was used by 98 per cent of the households, evaporated by two-fifths, and nonfat dry milk solids by one-tenth. The average amounts used per household in terms of fresh fluid milk are shown in Table 1. While relatively few households used any fresh milk other than whole, among the families which did, half-and-half, buttermilk, chocolate milk, and especially skim milk made important contributions (Table 1).

The average weekly fresh milk consumption based on all households was 11.4 qt. per household. The use of processed milk increased this figure to the equivalent of 12.5 qt. Evaporated milk and nonfat dry milk solids for the most part supplemented the use of fresh milk. More than half of the households used fresh only, 44 per cent used both fresh and processed, and only 2 per cent used processed alone. None used the dry milk solids alone. Evaporated and dried milks, on the average, contributed the equivalent of 1.9 and 3.4 qt., respectively, to the week's supplies of those households using them.

Households using both fresh and processed milk used the equivalent of a little over 15 cups (omitting milk used in baking, fed to pets, or wasted) per person per week, as compared with 14 cups used by those buying only fresh milk. The corresponding figure for households using only processed milk was a little over 4 cups.

The wide range in amounts of milk used per household shows that within the averages are concealed extremely low and high consumptions (Table 1).

FAMILY CHARACTERISTICS AND USE OF MILK

Income had no significant[2] effect on home use of fresh fluid milk. However, the quantity used per person[3] tended to increase as income rose. Use of evaporated milk moved in the opposite direction, and significantly more households in the low income bracket than in the high reported its use (52 per cent compared to 28).

No income effect was apparent on the use of nonfat dry milk solids. However, household size apparently affected its use. Households of four or more persons reported it significantly more often and in

[1] Scientific Paper No. 1407, Washington Agricultural Experiment Stations, Pullman. Project 1132. This study was supported in part by the U. S. Department of Agriculture through a contract sponsored by the Home Economics Research Branch, Agricultural Research Service. A bulletin to be published by the Department will contain information on additional foods used in two other cities. Received for publication May 4, 1955.

[2] At the 5 per cent level.

[3] The equivalent of one person having twenty-one meals in the home.

a larger amount per person than smaller households.

Age is probably a much more important factor than income in total use of milk in the home. The effect of age was apparent when households were classified by stage in the family life-cycle. Per person use of all milk declined as households moved upward in age from those with children of six to eighteen years of age to those composed of middle-aged adults and then to those whose members were all fifty years old or over. The use of milk in households classified by size also indicates the age effect. The two-person households, which consumed noticeably less milk per person than larger ones, consisted predominantly of adults aged fifty or older (Table 2).

WAYS MILK WAS USED

Both fresh and evaporated milks were used chiefly in beverages, three-fourths of all fresh milk and three-fifths of evaporated being used in this way (Table 2). About half of the households reporting evaporated milk used it only in coffee or tea. Thirteen per cent of all fresh milk, compared to 6 per cent for evaporated, was used at the table on cereals, fruits, and desserts. Few households used evaporated milk in this way, but those which did used about the same amount as those using fresh milk—approximately 2 qt. (milk equivalent) per week. Batters and doughs took about one-twentieth of each type of milk, with an average weekly use of about 3 cups (milk equivalent) per household concerned.

Seventeen per cent of the evaporated milk was used in "other cookery" in contrast to 6 per cent of the fresh, although the amount per household concerned was about the same—approximately 1 qt. (milk equivalent) per week. Some milk of both types was bought to feed pets and some was wasted, though few households reported these practices.

Nonfat dry milk solids were reconstituted for beverage use and were also used in batters and doughs and in other cookery. Of the 10 per cent of the households using this form of milk, over half made it up into fluid milk, about one-fourth used it in dry form only, and 14 per cent used it both ways. All three groups used it in baking and other cookery. Some homemakers evidently found it handy to mix several quarts at a time and keep it in the refrigerator to be used as they customarily used fresh milk.

TABLE 1

Types of milk used in one week

TYPE OF MILK	HOUSEHOLDS USING	AVERAGE USE, BASED ON ALL HOUSEHOLDS	AVERAGE USE PER HOUSEHOLD USING EACH TYPE OF MILK	RANGE OF USE PER HOUSEHOLD USING EACH TYPE OF MILK
	%	*qt.**	*qt.**	*qt.**
Any fresh fluid	98	11.4	11.7	0.2–48.0
Whole	97	10.7	11.1	†
Half and half	21	0.2	0.9	†
Buttermilk	15	0.2	1.6	†
Skim milk	4	0.2	6.0	†
Chocolate milk	3	0.1	1.6	†
Evaporated milk	41	0.8*	1.9*	0.2–10.2*
Nonfat dry milk solids	10	0.3*	3.4*	0.3–18.2*
Total	100	12.5*	—	0.6–48.4*

* Milk equivalents of dairy products (excluding butter) in terms of protein and minerals have been developed by the Home Economics Research Branch, U. S. Department of Agriculture, as follows: 1 lb. evaporated milk is the equivalent of 0.93 qt. fresh milk; 1 lb. nonfat dry milk solids is equivalent to 4.56 qt. fresh milk.

† Not available.

COST OF MILK USED

Table 2 shows that the cost of milk per person varied more, on the average, than did the amounts of all milk used. This implies judicious combination of fresh fluid, evaporated, and dried on the part of some households. With minimum prices of 8 cents a

TABLE 2

Cost of milk used per person per week*

GROUP	NUMBER OF HOUSEHOLDS	AVERAGE SIZE OF HOUSEHOLD	ALL MILK† USED	COST‡ OF ALL MILK USED PER WEEK	
				Per person	Per household
All Households					
		persons	*qt./person/week*		
Total sample	226	3.23	3.9	$0.83	$2.68
Households Classified by Income					
Low income	60	3.07	3.7	$0.79	$2.43
Middle income	76	3.15	3.8	0.82	2.58
High income	90	3.40	4.0	0.86	2.93
Households Classified by Size§					
2 persons	79	1.97	3.5	$0.77	$1.51
3 persons	59	2.90	4.0	0.86	2.50
4 persons	37	3.93	4.1	0.86	3.38
5 or more persons	46	5.45	4.0	0.83	4.50

* Equivalent of one person having 21 meals at home. Total number of person-meals ÷ 21 = number of equivalent persons.

† Milk equivalent.

‡ Prices prevailing in Everett at time of survey (3 per cent sales tax added):

Whole milk and chocolate milk, home delivered—21¢ per quart
Buttermilk, home delivered—18¢ per quart
Skim milk, home delivered—16½¢ per quart
Half-and-half, home delivered—28½¢ per pint
Evaporated milk, 41¢ for 3, 14½-oz. cans
Nonfat dry milk solids, 37½¢ per pound

§ Five households having fewer than 31 person-meals and hence classified as 1-person households are omitted from these figures. These households are considered in the income classification above, however.

TABLE 3

Beverage use of fresh fluid milk

AGE GROUP	NUMBER OF FAMILY MEMBERS*	AVERAGE CONSUMPTION OF FRESH FLUID MILK				
		At home	Away from home	Over-all average	Range	Median
		qt./week	*qt./week*	*qt./week*	*qt./week*	*qt./week*
1–5 years	90	3.95	0.26	4.21	0–10.0	4.0
6–12 years	107	3.96	0.56	4.52	0–12.0	4.6
13–19 years	77	3.61	0.46	4.07	0–9.3	3.9
20–29 years	73	2.09	0.15	2.24	0–7.0	2.0
30–49 years	222	1.50	0.15	1.65	0–20.0†	1.2
50 years and over	161	1.70	0.03	1.73	0–10.5	1.5

* Includes 99 per cent of family members over one year of age living at home. For 1 per cent, the homemaker did not know whether milk was drunk away from home or not.

† The 20-qt. drinker drank milk constantly to relieve a dry throat and ate little else. The next highest consumption in this age group was 8.2 qt.

quart (milk equivalent) for nonfat dry milk solids 16 cents a quart (milk equivalent) for evaporated whole milk, and from 16½ to 21 cents a quart for fluid skim, buttermilk, and fluid whole milk, homemakers could make a variety of combinations to fit family tastes and budget.

USE OF MILK AT HOME AND AWAY

The use of milk of all kinds in the home has been discussed in terms of weekly use per person, counting twenty-one home meals as one person. Included were all persons, family members or others, sharing the meals. One can be more precise about the consumption of fresh milk as a beverage by family members. Homemakers reported both the fresh milk drunk at home and that drunk away from home by family members. Table 3 shows the average quarts drunk per week at home and away by members of different ages, the range in total milk drunk, and the median.

The effect of Everett's school lunch program can be seen in the "away from home" drinking of milk by children of school age. A number of children who carried their lunches bought milk[4]. The sharp drop (45 per cent decrease) in milk drunk by the twenty- to twenty-nine-year-old group compared to the adolescents of thirteen to nineteen years is particularly noticeable. There is another noticeable drop (26 per cent) between persons in their twenties and the next older group.

Total milk consumption figures should include non-beverage use of fresh milk and the milk equivalent of other commercial milk products. Our data do not show how non-beverage use of fresh milk was divided among individuals. As a substitute for more exact data, one may take the average consumption per equivalent person. By combining the fresh milk (except that in beverages) with evaporated (except that in infant formulas) and with dried, and deducting milk fed to pets or wasted, an average use per equivalent person of 0.4 qt. was calculated. To this should be added an estimate for commercial cheese and ice cream, since these are popular foods. From the recent studies in West Coast cities, a reasonable estimate would appear to be the equivalent of 1.5 qt. milk per person per week (1–3). Adding 1.9 qt. to the beverage use of fresh milk shown in Table 3 gives an estimate of total average use by persons of different ages.

We in the United States are most likely to lack calcium, when the diet is low in milk. Assuming that three-fourths of the calcium allowance would come from milk in its various forms, a crude estimate has been made of the incidence of low calcium intake in different age groups (Table 4). The high percentage of estimated inadequate intake in all groups over twelve years old is noticeable.

[4] Milk taken from home counted as milk drunk at home, since it came from home supplies.

TABLE 4

Fresh fluid milk drunk per week by persons of different ages

AGE GROUP	PERCENTAGE DISTRIBUTION OF INDIVIDUALS						
	No milk drunk*	Less than 1 qt.	1–1.9 qt.	2–2.9 qt.	3–3.9 qt.	4 qt. or more	Inadequate total milk consumption (estimated)†
yr.							
1–5	4	1	3	15	25	52	19
6–12	4	0	3	14	19	60	25
13–19	12	0	11	14	14	49	52
20–29	16	11	21	16	20	16	44
30–49	18	22	24	21	6	9	62
50 and over	19	17	25	22	10	7	58

* In the 1–5-year age group, one child had an allergy to milk and drank soy bean milk only; the other three of this age were in the families using processed milk only, as were all of those in the 6–12-year age group, two-thirds of those in the 13–19 age group, one-sixth in the 20–29 age group, one-twelfth in the 30–49 age group, and one-eighth of those in the oldest group.

† Assuming that three-fourths of the calcium allowance would be from milk and that 1.9 qt. per person per week would be obtained from other sources, the average weekly need for fresh milk in beverage form was estimated to be: 1–5 years, 2.7 qt.; 6–12 years, 3.1 qt.; 13–19 years, 4.2 qt.; 20 years and over, 1.7 qt. Those drinking less than these amounts were classified in the "inadequate" category.

SUMMARY AND CONCLUSIONS

The average weekly consumption of milk by Everett, Washington households was increased one-tenth (over 1 qt.) through the use of evaporated milk and nonfat dry milk solids. When families were classified by income, the amount of all milk used per person varied less than its cost. This reflects the variety of forms of milk on the market at different prices. Age of household members appeared to be the most important factor affecting household use of milk.

Fresh fluid milk constituted nine-tenths of the milk used, with three-fourths of it being drunk as a beverage. With so large a proportion of the main type of milk used in beverages, those persons who did not drink it regularly or drank it only in coffee or an occasional other beverage probably had low calcium intake. The percentage of individuals estimated to have lower than the recommended calcium intake increased sharply with age after twelve years. School lunch or milk plans were an important factor in milk consumption for some children.

It is important to realize that the recommended allowances are set high enough to maintain good nutrition in the well population rather than to provide for the needs of the average person (4). To cover individual variations in needs, they have been set higher than would be required by some persons. However, the low calcium intake indicated, particularly in the adolescent and older age groups, calls for extended efforts to increase the use of milk and other dietary sources of calcium.

There is evidence that the adult system can adapt to lower or higher calcium intakes (5). However, we do not know under what geographic conditions, with what combinations of nutrients in the diet, and for what length of time "low" intakes may be nutritionally acceptable. Today we are concerned about lifetime nutritional habits which will increase the chances for healthy infants, who will enjoy extended years of vigorous health over a longer life span than we now anticipate. Until further evidence is available, the best we can do is to use the calcium allowance as suggested in nutritional planning for large groups and in nutritional analysis of family dietaries.

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Differences Between Hospitals and Industry

Hospitals, although constituting one of the biggest industries in the country, are unique in many ways and cannot always be operated similarly to the manufacturing industry, according to John D. Staley, Personnel Director, Peter J. Schweitzer, Inc., Spotswood, New Jersey. Writing in the September issue of *Hospitals*, Mr. Staley noted that hospitals are turning to industrial management consultants and to industry for guidance in establishing and administering programs of methods improvement, employee relations, and management development.

He cautioned, however, that "the hospital industry is unique in many ways, so transplanting industrial programs for use in the hospital field is limited." Hospital efficiency and organization cannot be judged like industry's, he stated. In business, "the effectiveness of the administration is judged . . . on the basis of the financial audit. Many decisions in the hospital are distinctly contrary to sound financial judgment because patient care outweighs financial sagacity and economics of operations. No way has been discovered to mechanize patient care, although many hospitals have introduced work-saving devices."

Basic differences are also evident in interpersonal relations, Mr. Staley pointed out. There is an informal hierarchy of professions, sub-professions, and non-professions that does not exist the same way in industry. Personal security is an important part of most supervisory training programs, but it differs in the hospital because the "medical staff members do not depend on hospital management for salary and tenure" while the administrative staff does.

Keith Taylor, Associate Director of the Hospital Administration Course, University of California, Berkeley, discussed some of the marked differences in the performance of duties by hospital executives and industrial executives, in the same issue of *Hospitals*. He said that the responsibility for establishing and coordinating and organizing and developing personnel, public, and government relationships is common to both groups. However, corporations work for profit, while the profit motive is subordinate in the hospital field. "This necessitates different attitudes and approaches to many operating problems if the objectives of the different institutions are to be met."

In industry, production is a clear function of the organizational personnel. The primary service of the hospital—care of patients—is rendered only in part by hospital employees. Most of it is given by physicians on the hospital staff, who are seldom employees. The executive may have some part in the processing of medical staff applications, but approval rests with the board and recommendations come from the medical staff itself.

"It appears," Mr. Taylor said, "that while industry and hospitals, industrial executives and hospital administrators, may gain by a sharing of experience, there exist peculiar problems of each which must be recognized. Simplification of administrative problems is an aid, but oversimplification is only a delusion."

Effect of Amino Acid and Vitamin B_{12} Supplements on the Biologic Value of Proteins in Rice and Wheat[1]

BARNETT SURE, Ph.D.[2]

Department of Agricultural Chemistry, University of Arkansas, Fayetteville

IT HAS been known for many years that the proteins of wheat are deficient in lysine and those of corn are deficient in both tryptophan and lysine (1). In 1951, Pecora and Hundley reported on the nutritive improvement of white rice by addition of lysine and threonine (2). The author has since demonstrated that threonine is deficient in the proteins of wheat (3), corn (4), rye (5), and barley (6).

In this communication are reported results of studies on the influence of various amino acids and vitamin B_{12} additions on the biologic value of the proteins in milled rice, processed milled rice[3] and, enriched milled hard wheat flour.

EXPERIMENTAL PROCEDURE

This study was carried out on albino rats of the Wistar strain. Control groups fed basal diets without amino acid additions had twenty-four animals in each group. Experimental groups fed rations with amino acid and vitamin B_{12} additions each had twelve animals. The sexes were equally divided. The animals were twenty-eight to thirty days old and weighed 50 to 55 gm each. The experimental period was ten weeks. The only sources of proteins were milled rice, processed milled rice, and enriched milled hard wheat flour. The milled or polished rice was obtained from Stuttgart, Arkansas rice mills, the processed rice and the milled wheat flour were purchased in local grocery stores. The rice rations supplied 5 per cent and the wheat rations 8 per cent proteins. The protein content of the milled rice was 6.2 per cent, and it was, therefore, possible to feed a maximum of only 5 per cent of proteins in the rice-containing rations.

These rations contained 2 per cent Cellu flour for roughage; 4 per cent Sure's salts No. 1 (7); 7 per cent hydrogenated vegetable shortening; 2 per cent cod-liver oil; 1 per cent wheat germ oil; and the rest, percentagewise, Cerelose (glucose). The fat-soluble vitamins A, D, and E were furnished by the cod-liver oil and wheat-germ oil in the rations. The following components of the B-complex were administered separately from the ration to each animal five times weekly and a double allowance was given on Saturdays: 25 mcg. each of thiamine, riboflavin, pyridoxine, and niacin; 150 mcg. calcium pantothenate, 3 mg. para-aminobenzoic acid, 1 mg. inositol, and 6 mg. choline chloride. The protein content of the milled rice, processed rice, and enriched milled wheat flour was 6.2, 7.7, and 10.2 per cent, respectively.

RESULTS

The results are summarized in Table 1.

Rice Protein

It is evident from Table 1 that there was no growth response to the addition of lysine alone as a supplement to the proteins in milled (polished) rice. However, the addition of 0.3 per cent DL-threonine in the presence of 0.4 per cent L-lysine was followed by 125.1 per cent additional growth and 51.9 per cent increase in protein efficiency ratio, expressed as gains in body weight per gram of protein intake. The fortification of lysine and threonine with 0.1 mcg. vitamin B_{12} per animal per day resulted in no additional growth, but because of lesser food consumption, this vitamin was responsible for 9.2 per cent increase in protein efficiency. The supplementation

[1] Published with the approval of the Director, Arkansas Agricultural Experiment Station. Aided by grants from E. I. du Pont de Nemours & Co., Wilmington, Delaware, and the National Institutes of Health, Bethesda, Maryland. A preliminary report on this paper was presented before The American Institute of Nutrition in San Francisco, on April 14, 1955. Received for publication May 6, 1955.

[2] With the technical assistance of Leslie Easterling, Joy Dowell, and Mary Crudup.

[3] Minute Rice, which is precooked in the presence of water by an Ozai-Durrani patented process.

TABLE 1

Effect of amino acid and vitamin B_{12} supplementation on biologic value of milled rice, processed milled rice, and enriched milled hard wheat flour (average results per animal for a ten-week period)

RATION NUMBER	COMPOSITION OF RATION	GAINS IN BODY WEIGHT		TOTAL FOOD INTAKE	PROTEIN INTAKE	PROTEIN EFFICIENCY*	
		Grams	Change			Ratio	Change
	Milled Rice†						
			%	gm.	gm.		%
1	milled rice (MR)	49.9	—	540.2	27.0	1.85 ± .03‡	—
2	MR + 0.1 mcg. B_{12} daily	50.0	0.2	557.9	27.9	1.79 ± .04	−3.1
3	MR + 0.4% L-lysine	53.7	7.6	515.4	25.8	2.08 ± .06	12.4
4	MR + 0.4% L-lysine + 0.1 mcg. B_{12} daily	45.7	−9.2	471.7	23.6	1.94 ± .05	4.9
5	MR + 0.4% L-lysine + 0.3% DL-threonine	116.1	132.7	764.7	38.2	3.04 ± .02	64.3
6	MR + 0.4% L-lysine + 0.3% DL-threonine + 0.1 mcg. B_{12} daily	114.1	128.6	709.4	35.5	3.21 ± .03	73.5
7	MR + 0.4% L-lysine + 0.3% DL-threonine + 0.5% DL-methionine	126.7	153.9	715.9	35.8	3.54 ± .05	91.3
8	MR + 0.4% L-lysine + 0.3% DL-threonine + 0.5% DL-methionine + 0.1 mcg. B_{12} daily	120.5	141.5	731.6	36.6	3.29 ± .06	77.8
	Processed Milled Rice†						
9	processed milled rice (PMR)	45.6	—	543.7	27.2	1.68 ± .02	—
10	PMR + 0.1 mcg. B_{12} daily	43.7	−4.3	533.8	26.7	1.64 ± .03	−2.4
11	PMR + 0.4% L-lysine	34.1	−25.2	486.3	24.3	1.40 ± .05	−16.7
12	PMR + 0.4% L-lysine + 0.1 mcg. B_{12} daily	34.6	−24.1	420.1	21.0	1.62 ± .03	−3.5
13	PMR + 0.4% L-lysine + 0.3% DL-threonine	112.8	147.3	759.1	38.0	2.95 ± .04	75.6
14	PMR + 0.4% L-lysine + 0.3% DL-threonine + 0.1 mcg. B_{12} daily	117.9	158.6	735.5	36.8	3.20 ± .06	90.5
15	PMR + 0.4% L-lysine + 0.3% DL-threonine + 0.5% DL-methionine	119.0	161.0	700.9	35.0	3.40 ± .05	102.4
16	PMR + 0.4% L-lysine + 0.3% DL-threonine + 0.5% DL-methionine + 0.1 mcg. B_{12} daily	110.3	141.9	655.3	32.8	3.36 ± .07	100.0
	Enriched Milled Hard Wheat Flour						
17	milled wheat (MW)	30.0 ± 6.8§	—	549.2	43.9	0.68 ± .02	—
18	MW + 0.4% L-lysine	89.4 ± 8.8	198.0	665.5	53.2	1.68 ± .03	147.0
19	MW + 0.4% L-lysine + 0.1 mcg. B_{12} daily	100.5 ± 10.4	235.0	741.5	59.3	1.70 ± .03	150.0
20	MW + 0.4% L-lysine + 0.2% DL-threonine	128.8 ± 10.5	329.3	772.9	61.8	2.08 ± .04	206.0
21	MW + 0.4% L-lysine + 0.2% DL-threonine + 0.1 mcg. B_{12} daily	165.2 ± 13.5	450.7	818.3	65.5	2.52 ± .05	270.6
22	MW + 0.4% L-lysine + 0.2% DL-threonine + 0.5% DL-valine	135.5 ± 11.2	351.7	774.2	61.9	2.19 ± .03	222.1
23	MW + 0.4% L-lysine + 0.2% DL-threonine + 0.5% DL-valine + 0.1 mcg. B_{12} daily	173.9 ± 10.5	479.7	908.9	72.7	2.39 ± .04	251.5

* Expressed as gains in body weight per gram of protein intake.
† Bought in retail grocery stores.
‡ Standard deviation of the means.
§ Standard deviation.

of lysine and threonine with 0.5 per cent DL-methionine was effective in producing a further increase of 21.2 per cent in body weight and 27.0 per cent increase in protein efficiency (Rations 5 and 7). The failure of Pecora and Hundley (2) to obtain a response to methionine added to their polished rice ration can now be explained, since a threonine deficiency had to precede a response to methionine. Vitamin B_{12} failed to supplement the lysine-threonine-methionine additions (Ration 8).

Response to the amino acid and vitamin B_{12} additions to the processed milled rice, results of which are presented in Table 1, were similar to those obtained with the non-processed milled rice, with the following exception: The addition of 0.4 per cent L-lysine to the processed milled rice produced an inhibitory effect on growth, in presence and absence of vitamin B_{12} (Rations 11 and 12) which was overcome by the addition of 0.3 per cent DL-threonine (Ration 13). There was a negligible response in growth following addition of 0.5 per cent DL-methionine but an increase of 11.9 per cent in protein efficiency ratio because the small growth was made on lesser food intake (Ration 15). There was no response to vitamin B_{12} additions in the presence or absence of amino acid supplements to the proteins in processed milled rice.

A marked response to 0.4 per cent L-lysine occurred when the ration was also fortified with 0.3 per cent DL-threonine; in other words, there were apparently two amino acid deficiencies in the processed milled rice, namely, lysine and threonine, although a response to L-lysine for growth could be obtained only after addition of DL-threonine.

Wheat Protein

The results of the series of experiments using enriched hard milled wheat flour are presented in Table 1 as expressed by protein efficiency ratios. The addition of 0.4 per cent L-lysine produced 198 per cent increased growth and 147 per cent increase in protein efficiency ratio (PER). The daily dose of vitamin B_{12} was 0.1 mcg per animal. The supplementation of lysine with vitamin B_{12} was followed by 37 per cent additional growth but only an increase of 3 per cent in PER, because such growth was accompanied by greater food intake (Ration 19). Addition of 0.2 per cent DL-threonine to the lysine ration resulted in 131.3 per cent increased growth and 59 per cent increase in PER (Ration 20). Vitamin B_{12} exerted a marked influence on growth and PER as a supplement to the lysine-threonine ration, i.e., 121.4 per cent increased growth and 64.6 per cent increase in PER (Ration 21). The growth response to 0.5 per cent DL-valine was small, i.e., 22.4 per cent increased growth and 16.1 per cent increase in PER (Ration 22). However, the greatest response in growth (a gain of 173.9 gm. in body weight) was obtained when the enriched hard-milled whole wheat flour was supplemented with 0.4 per cent L-lysine, 0.2 per cent DL-threonine, 0.5 per cent DL-valine, and 0.1 mcg. vitamin B_{12} per animal per day (Ration 23). Vitamin B_{12} also produced a marked response in growth to this ration, i.e., 128.0 per cent increased growth, largely due to increased food intake and, therefore, resulting in an increase of only 29.4 per cent in PER (Rations 22 and 23).

DISCUSSION

It is evident from the results of this study that the proteins in milled and in processed milled rice can be considerably improved by the additions of lysine and threonine and that further improvement in the proteins of non-processed milled rice can be obtained by additional supplementation with methionine. It has also become apparent that the proteins in enriched milled hard wheat flour can be markedly improved by the addition of lysine, threonine, and vitamin B_{12} and to a lesser extent by lysine, threonine, and valine. However, the most significant observation in this investigation is the remarkable influence of minute doses of vitamin B_{12}, when supplemented with amino acids which are deficient in the proteins of milled wheat flour, on growth and efficiency of protein utilization. Table 1 indicates that vitamin B_{12}, in addition to stimulating greater food intake (Rations 22 and 23), also produces greater efficiency of protein utilization as evidenced from gains in body weight per gram of food intake (Rations 20 and 21).

Such data suggest that vitamin B_{12}, in addition to its various functions as the extrinsic maturation factor in pernicious anemia (8), its antithyrogenic properties (9), and its role in reproduction and lactation (10, 11), may participate as a coenzyme or activator of intestinal peptidases, thus making more essential amino acids available during digestion for protein synthesis. That vitamin B_{12} is an activator of SH enzymes was recently reported by Dubnoff and Bartron (12). Wetzel and associates, in investigating vitamin B_{12} supplements, obtained (13) remarkable growth in school children whose growth failure did not respond to any other dietotherapy. Perhaps this effect of the B_{12} supplements can be explained on the basis of this vitamin-activating intestinal digestive enzyme. This is a virgin field and needs further research.

SUMMARY

The proteins of milled and processed milled rice were improved by the addition of lysine, threonine, and methionine, and the proteins in enriched milled hard wheat flour were improved by additions of lysine, threonine, valine, and vitamin B_{12}.

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The secret of being a bore is to tell everything.—*Voltaire.*

Effect of Varied Soil Nitrogen on B Vitamins in Collards[1]

LOIS ALMON, Ph.D., M. GIEGER, and W. S. ANDERSON[2]

Mississippi Agricultural Experiment Station, State College

THIS work is a continuation of that reported by Sheets *et al.* (1) and was activated by a feeling of need for additional data in some of the areas in which the earlier data seemed significant but meager. Thus, in the work of Sheets, figures for crude protein and riboflavin over a period of four years were consistently higher in plants grown with added nitrogen, but the increases in these two constituents over the amounts found in the plants grown without added nitrogen were sometimes not statistically significant. Thiamine and niacin assays were done only one year, and these, too, showed results which suggested a positive effect of increased nitrogen on vitamin content, although these findings were inconclusive since they did not always agree at the three cooperating stations.

Other previous work (2–8) has shown that environmental factors play some part in the development in a number of plants, chiefly grains, of one or more of the three vitamins considered here. However, these workers report no analyses to show what aspects of the environment were responsible. Some work has been done, however, which has dealt primarily with alterations in the composition of the soil as they have influenced the concentration of these vitamins. Most of that done prior to 1940 concerned only thiamine and showed no effect of changes in the nitrogen level of the soil on the concentration of this vitamin (9, 10). These workers used the bradycardia method of assay for the vitamin. With the development of the thiochrome and microbiologic methods of assay, differences in vitamin concentration corresponding roughly to the amount of nitrogen added to the soil, at the lower levels of application, began to be noted (11–15). Hunt *et al.* (13) included riboflavin in their studies and found increases in this vitamin as well; and Pfaff (15) added niacin to the list of those B vitamins which seemed to be increased by applications of nitrogen. The work of Burkholder and McVeigh, (12) Witsch and Flugel (14), and Pfaff (15) included analyses on the leaves of plants, and therefore has special bearing on our study of collards.

Apart from experiments with nitrogen, it has been shown that other soil components may affect the vitamin content of plants. The work of Lyon and Beeson (16) is particularly striking in that it shows what pronounced effects the trace elements, boron and manganese, may have.

A more complete review of the literature on the physiologic aspects of thiamine and riboflavin in plants has been written by Speirs (17).

PROCEDURE

The plants for this work were grown in five replications or blocks, each block containing three plots which differed from each other in the amount of nitrogen applied. Plot 1, the low-nitrogen plot, in each case received 2-8-4 fertilizer at the rate of 1000 lb. per acre, no side dressing; Plot 2, the medium-nitrogen plot, 1000 lb. of 8-8-4 with 40 lb. nitrogen-bearing fertilizer added as a side dressing; Plot 3, the high-nitrogen plot received 8-8-4 fertilizer at the rate of 1000 lb. per acre, with nitrogen fertilizer added at the rate of 60 lb. per acre applied in two side dressings, the first when the plants were 4 in. high, and the second eighteen days later. The low-nitrogen plots, therefore, received a total nitrogen application of 20 lb. per acre; the medium plots, 120 lb. per acre; and the high plots, 200 lb. per acre. Three-fourths of the total nitrogen was applied as sodium nitrate and one-fourth as ammonium sulphate. The plots representing the three nitrogen treatments were randomized in their order of sequence in the five replications.

The Georgia variety of collards was used throughout. Plants were started in the greenhouse in flats, transferred to 2½-in. pots when the first true leaf

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[2] The authors gratefully acknowledge the help of Dr. W. J. Drapala in the statistical analyses presented in this paper.

appeared, and set out in the field October 5 and 6, 1954, thirty-one or thirty-two days from the time the seed was sown. The plants varied in size. Therefore, to restrict this variability to blocks, plants were selected for uniformity of size for each block. Blocks I, II, and III, contained plants of fairly uniform size; plants in block IV were smaller. Those in block V were even smaller and fewer in number, and therefore spaced 18 in. apart instead of 12 as in the other replications, in order to fill out the space. All rows were 40 ft. long; there were three rows in each plot. Each block was bordered on the two long sides by a guard row of plants.

Plants were allowed to grow until differences in nitrogen treatment seemed to be reflected in differences in size. This occurred about ten weeks after the plants were set out. Then one leaf from each plant of the middle row, excluding four plants at each end of the row, was collected for analysis. These were fully expanded leaves—the third or fourth counting down from the bud. The different blocks were harvested on different days, but all three nitrogen-treatment plots in a given block were harvested on the same day, and harvests were made at the same time in the morning for all blocks. Every fourth plant in the outside rows, to a total of twelve plants, was collected to determine yield.

Leafy tissue for the analyses was treated as described in the work done by the Southern Cooperative Group (18), and analyses for thiamine and riboflavin were done on tissue which was extracted about 3 hr. after the leaves had been picked, only washing, surface drying, and shredding having intervened. These analyses were done by fluorometric methods as adapted by the Southern Cooperative Group (18). Niacin assays were done on dried tissue by the microbiologic method as published by the Association of Vitamin Chemists (19). The determination of nitrogen was done by the official method including nitrates of the American Organization of Agricultural Chemists; it, too, was done on dried, ground material. Moisture determinations were done on 50 gm. of original sample dried at 90°C.

RESULTS AND DISCUSSION

Results of all the analyses are given in Table 1. They indicate that total nitrogen, thiamine, riboflavin, and niacin concentrations showed significant increases with the application of nitrogen fertilizer. It is interesting that the over-all difference in yield, although great enough to be suggested by visual inspection, was not statistically significant. This may be explained by the considerable variability in size among the plants within each plot, which may possibly be due to the variability in the nitrogen content of the soil before the application of fertilizer. Nitrate nitrogen varied between 1.03 and 41.93 p.p.m. among the various plots, and ammonia nitrogen between 24.58 and 109.4 p.p.m. Certainly

TABLE 1

Mean values of five replications for yield, moisture, nitrogen, and vitamin content of collards grown at three levels of soil nitrogen

PLOT	YIELD†	MOISTURE	TOTAL NITROGEN‡	THIAMINE‡	RIBOFLAVIN‡	NIACIN‡
	gm./plant	*%*	*%*	*mcg./100 gm.*	*mcg./100 gm.*	*mg./100 gm.*
Plot 1, low-nitrogen	415	85.3	4.37	924	1809	9.2
Plot 2, medium-nitrogen	478	85.7	5.57	1172	2606	10.09
Plot 3, high-nitrogen	545	85.9	5.58	1206	2602	10.8
Significance	NS	NS	**	*	**	**
L.S.D. #	—	—	0.34	198.85	246.0	0.85

* Significant at the 5% level of probability.

** Significant at the 1% level of probability.

NS—no significance.

† Mean value of 12 plants in each replication, making total of 60 plants.

‡ Dry basis.

Least significant difference.

the small order of difference in yield among the three nitrogen treatments can be ascribed to a higher nitrogen content of the soil than was anticipated before fertilizer was applied. This accumulation of nitrogen in an area in the college fields which was considered to be low in this element is explained by the low rainfall of the past two years. It will be noted that although the differences for total nitrogen, thiamine, riboflavin, and niacin were significant when plants from the medium- and high-nitrogen plots were compared with those from the low-nitrogen areas, significant differences between plants grown in the medium- and high-nitrogen plots were not found.

Similar results for total nitrogen were reported for plants from the low-nitrogen plots as compared with those from medium- and high-nitrogen plots from the Virginia Experiment Station in the work reported by Sheets *et al.* (1), and for the three B vitamins from all three of the Experiment Stations which cooperated in that work, namely, Mississippi, North Carolina, and Virginia. Figures for soil nitrogen are not given in that publication, but it might be assumed from the large size of the plants grown at the Virginia station that there was a plentiful supply of it in all plots at the outset, and that therefore additional applications were hardly necessary for good plant growth. It is interesting that even under these conditions, there was some increase in plant nitrogen and in thiamine and riboflavin with the application of nitrogenous fertilizer.

Based upon the results reported here and those of Sheets *et al.* (1), the conclusion may be drawn that

some increase in thiamine, riboflavin, and niacin occurs in collards when the total nitrogen of the plant increases due to the application of nitrogen-containing fertilizer to the soil. These increases amount to maximum values of 0.1 mg. for thiamine, 0.17 mg. for riboflavin, and 1.6 mg. for niacin for 100 gm. fresh leaf blade. The daily recommended allowances for these three vitamins are 1.5, 1.8, and 15 mg. respectively (20). It follows, therefore, that 100-gm. portions of collards grown with added nitrogen fertilizer could, under the most favorable conditions, contribute roughly an additional 7 to 10 per cent of the daily recommended allowance of these three vitamins above what would be contributed by the same vegetable grown in soil low in nitrogen.

Although these results are at variance with the bulk of data dealing with the interrelationship of soil fertility and the nutritive value of plants, they are not surprising in view of the role of these vitamins as components of respiratory co-enzymes. It seems reasonable to postulate that factors which stimulate the growth rate of plants could also lead to the higher concentration of respiratory catalysts. Nitrogen, being a constituent of each of the three kinds of molecules under consideration, might be expected to be particularly important in this way. From the data presented here, it may be inferred that the increase in vitamin content may precede that degree of growth which is statistically significant in terms of yield. That the potentiality for increased growth was present at the time the leaves were collected was attested to by the higher nitrogen content of those plants which had the higher vitamin contents.

SUMMARY

The application of 120 or 200 lb. per acre of nitrogen to soil having a moderate initial nitrogen content resulted in increased concentrations of thiamine, riboflavin, and niacin in collard leaves. The increases were evident for the most part at the 120-lb. level of application and did not rise significantly with the more intensive fertilization.

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As of October 1, 1955, The American Dietetic Association had 11,526 members.

Editorial

A.D.A. CONSTITUTIONAL CHANGES

Changes delineating more explicitly The American Dietetic Association's purpose, function, and organization have now been incorporated into the legal Articles of Incorporation and the Constitution, by vote of the members.

In June, at a specially called meeting of members in Chicago, the Articles of Incorporation of the Association were amended so that Paragraph 1 now reads: "The purpose for which the corporation is organized is to improve the nutrition of human beings, to advance the science of dietetics and nutrition, and to advance education in these and allied areas."

To this Paragraph (1) was added a new Paragraph (1a), which reads: "In the event of dissolution of the corporation its property shall be distributed to nonprofit organizations rendering public service in education and in scientific advancement in the field of dietetics."

At the 38th Annual Meeting of the Association in St. Louis in October, the membership followed up this action by voting amendments to the Constitution, providing not only for this change in purpose, but certain organizational changes which have been under study for some time. These amendments, in general, cover the following phases of the Association's function and organization:

1. Purpose. The purpose of the Association was amended to be identical with that stated in the Articles of Incorporation.
2. Membership. Changes were made in line with recommendations of the Membership Requirements Committee. These include:
   a. Endorsement of an applicant by three persons, two of whom are active members of the Association, instead of only two endorsements as previously.
   b. Acceptance of a master's degree in Public Health Nutrition in lieu of a dietetic internship.
   c. For applicants presenting three years' experience:
      (1) Acceptance of a master's degree in nutrition, foods, or institution administration in lieu of one year of unsupervised experience.
      (2) Acceptance of a two-year, half-time graduate assistantship in foods, nutrition, or institution administration (resulting in a master's degree), concurrent with graduate study in one of these areas in lieu of one year's unsupervised experience.
3. Organizational changes designed to provide greater status and recognition for certain of the officers and committee chairmen and to strengthen committees and working bodies.
   a. The Speaker-Elect of the House of Delegates has been made a full, voting member of both the Coordinating Cabinet and the Council of the House of Delegates, rather than ex-officio as formerly.
   b. The Public Relations Chairman now has a voting seat on the Coordinating Cabinet, thus giving the public relations program due recognition.
   c. The number of Delegates-at-Large has been reduced from six to three, with the senior Delegates to serve two years on the Council of the House of Delegates, Coordinating Cabinet, and Finance Committee, thus strengthening these groups.
   d. The Speaker of the House of Delegates has been made a voting member of the Finance Committee, rather than ex-officio, and the President-Elect and Speaker-Elect now become ex-officio members of this Committee.
   e. Two Boards have been abolished, in line with recommendations of the chairmen of these Boards for the last several years.
4. Slight changes in terminology were also made to clarify intended meanings.

S. MARGARET GILLAM RECEIVES MARJORIE HULSIZER COPHER AWARD

At the Annual Banquet of The American Dietetic Association, held in St. Louis on October 21, 1955, S. Margaret Gillam received the highest honor which the Association bestows—the Marjorie Hulsizer Copher Award. Dr. Frank R. Bradley, Director, Barnes Hospital, St. Louis, in making the presentation, said:

> It has always been a particular and special pleasure when The American Dietetic Association invites me to make the Marjorie Hulsizer Copher Award in dietetics. There are two reasons for this. As you know, it was my good fortune to know Mrs. Copher for a decade and also to be a student and now colleague of her husband, Dr. Copher, and to know their lovely daughter. This relationship gave me an opportunity to spend pleasant hours in their home and to know Mrs. Copher for the fine person that she was. Too, I find this occasion a special pleasure because it enables me to meet and know the contributors to the scientific and professional status of your profession.
>
> The Copher Award—your highest award—captures the high sentiment and motivation of the past and preserves it for the younger members of the dietetic profession. It blazes the trail to high attainment. You always need to cherish the memory of women who made this profession and who founded the profession of dietetics. Year by year, the memory of women who made this profession and who

founded this organization fades, and the shadow of oblivion falls deeper until a portrait or a name alone serves as a link of continuity. The Copher Award forges another link. Let us recall the names of past recipients:

1945—Ruby F. Motley
1946—Mary Pascoe Huddleson
1947—Lulu Graves
1948—Grace Bulman
1949—Fairfax Proudfit
1950—Mary deGarmo Bryan
1951—Lenna Frances Cooper
1952—Lydia Jane Roberts
1953—Mable Munn MacLachlan
1954—Lillian Storms Coover

Of the famous names on the role of your profession, one is that of Marjorie Hulsizer Copher. She was decorated by King George V of England and by the French government for her services in World War I. She was one of the first to introduce the comparatively new profession of dietetics into the British army, where she was called the "Home Sister" in contrast to the British army nurse's title of "Nursing Sister." She served your Association actively from the time she became a member in 1921. She was Chief Dietitian at Barnes Hospital from 1921 to 1925, when she resigned to marry Dr. Glover H. Copher, Associate Professor of Surgery at Washington University. A daughter, Marjorie Ann, was born in 1929. Mrs. Copher died at Barnes Hospital on May 19, 1935, cutting short a distinguished career.

There are many other famous names on the rolls of your organization. In the continual remembrance of a glorious past, individuals and professions find their noblest inspirations. And, if today this inspiration, so valuable for its own sake, is strengthened, is it now because we have regained briefly a sense of historical continuity, which, in these hectic days, is so difficult to maintain? We are impatient with those who would recall the past and insist that only the present with its prospects and the future with its possibilities are important. Historical continuity serves to preserve basic principles, and we are convinced here today that a study of the historic past of this great profession highlights and adds new interest and information to the basic principle.

S. Margaret Gillam—trail blazer, of pleasing personality, adaptable, diplomatic, tactful, and cooperative, imbued with the spirit of service, possessing an anticipating mind, and having vision beyond present-day conditions—you have developed and advanced the art and science and profession of dietetics. Past-President of this organization, the first recorded dietitian to develop a pay cafeteria,[1] first Specialist in Dietetics with the American Hospital Association, one of the productive dietary administrators in one of our large university hospitals—you have served ably and loyally. It is our great pleasure to present to you the Marjorie Hulsizer Copher Award in Dietetics in recognition of your contribution to the field. We salute you.

The Award for Miss Gillam reads: "... IN RECOGNITION OF HER GREAT CONTRIBUTION TO THE SCIENTIFIC AND PROFESSIONAL STATURE OF HER CHOSEN PROFESSION ... THROUGH HER INNATE TALENT IN THE ART OF FOOD PREPARATION AND SERVICE ... THROUGH HER DEMONSTRATED EXCELLENCE IN PLANNING, ORGANIZING, AND OPERATING HOSPITAL DIETARY DEPARTMENTS AND APPROVED DIETETIC INTERNSHIPS, AND ... THROUGH HER ENERGY, ABILITY, AND DEVOTION IN TRANSLATING HER EXPERIENCE FOR THE GENERAL BENEFIT OF ALL DIETITIANS AND NUTRITIONISTS."

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MYRTLE L. BROWN BECOMES 1955 MARY SWARTZ ROSE FELLOW

At the Annual Banquet of The American Dietetic Association in St. Louis, on October 21, Dr. Lydia J. Roberts announced the recipient of the Mary Swartz Rose Fellow for 1955. In making the presentation to Myrtle L. Brown, who is working toward the degree of Doctor of Philosophy at Pennsylvania State University, Dr. Roberts said:

Tonight I have the honor of presenting to the Association the seventh recipient of the Mary Swartz Rose Fellowship Award. Those of you who have attended the annual meetings of this Association for the past six years have listened as many times to the history of this award—its donor, its nature, and its purpose. You have heard an equal number of appreciations of the life and work of the one for whom the award is named, Mary Swartz Rose. Each has been from the different viewpoint of someone who knew her, and together they have helped to round out a picture of this remarkable woman. There is little I can add to what has already been said.

Nevertheless, there are doubtless many new members present to whom the story is new, and it seems fitting that we recount its salient points once again. Also, it is well for us all to recall once a year the donor to whom we are indebted for this award, and above all to remind ourselves of the debt we owe to the one whom the award honors.

Let us then, tender our thanks to the generous donor of this award, The Nutrition Foundation, Inc. The Nutrition Foundation is itself a unique organization in that it is supported by a large number of commercial food organizations, but with no commercial strings attached. Grants from the funds of the Foundation are administered by a Scientific Advisory Committee which is composed of outstanding scientists in the fields of food and nutrition, with Dr. Charles Glen King as its Executive Director. This committee allots funds to individuals or groups for basic research in foods and nutrition. A glance at the acknowledgments given to this Foundation in research reports in the *Journal of Nutrition* and other publications will reveal the extent to which the Nutrition Foundation has helped to extend our knowledge in this important field.

Although the Foundation's major function is to promote nutrition research, it has also given support to various activities helping to spread nutrition education to the general public. Its own publication, *Nutrition Reviews*, and its popular leaflet, "Current Research in the Science of Nutrition," are also designed to disseminate research findings in a popular form.

It was this Foundation which in 1948 gave a grant to this Association for the establishment of a fellowship in the field of foods and nutrition. Through it, the Foundation wished to recognize the valuable work dietitians are doing in improving the nutrition of the people and through the fellowship to give the Association the opportunity of honoring one of its outstanding members. It was axiomatic that the person to be honored by having her name given to the award could be no other than Mary Swartz Rose. Who else could better epitomize our ideal of a home economist-nutritionist than she? As a biochemist she held her own with others in that field. She was elected to membership in the American Society of Biochemists and was a contributor to *The Journal of Biological Chemistry*. She was one of the founders of the American Institute of Nutrition. She served as its President

in 1936; she was for many years a member of its editorial board; and her articles appeared frequently in its journal.

All this could be said of many other biochemists. What sets her apart for us is the fact that she applied her biochemical skill to human problems. She was indeed a "human nutritionist," if I may use the term. Her researches were always on problems that were of real concern to human welfare. She did not, moreover, stop at the research level but concerned herself equally with practical application of the knowledge of nutrition to everyday problems of the people.

As Professor of Nutrition at Teachers' College in Columbia University, from 1920 until her death in 1941, she taught nutrition to hundreds of both graduate and undergraduate students. In addition, she gave a practical service course in the fundamentals of nutrition to literally thousands of elementary and high school teachers, teachers of physical training, and general students. Through her nutrition students, she carried out practical programs of nutrition education in schools, institutions, and other places where it was needed. Of greatest importance was her gift of inspiring students with her own enthusiasm and devotion to the cause of better nutrition and of sending them out with the firm desire to go and do likewise. These students are now scattered over the U. S. as well as other countries and are, I am sure, spreading the gospel of nutrition with something of the same spirit and enthusiasm that they gained from her and her teachings.

Her influence was even more wisely disseminated through her writings, especially through two of her books: *The Laboratory Handbook for Dietetics*, first published in 1914, and *Foundations of Nutrition*, which came out in 1927. Both were revised several times by Dr. Rose herself and are now being kept up to date by two of her devoted colleagues and friends, Dr. Grace MacLeod and Dr. Clara Mae Taylor. There are probably no two books that have more influenced nutrition teaching.

Dr. Rose also had many activities outside the laboratory and classroom. I shall mention but two. In 1936, she served as a member of the Nutrition Committee of the Health Committee of the League of Nations. In this capacity she helped to draft the League of Nations' dietary standards, which were widely used for many years. In 1933 she was appointed member of the Council on Foods of the American Medical Association and she continued as a member until her death in 1941. It was in this association that I came to know her best. As a fellow-member of the committee, I observed and shared the respect which all members had for her knowledge and good judgment, and the influence she had in helping to keep decisions on a practical, human level. Above all, I came to know her personally as a friend.

For further biographical data on Dr. Rose I refer you to her brief history as contributed by Dr. E. Neige Todhunter in the October, 1953 issue of the JOURNAL.[1] You will find therein that many of you can claim some honor from her life and work:

Ohioans may claim her because she was born in Newark, Ohio, October 31, 1874, and she was graduated from high school as valedictorian of her class, in Wooster, Ohio, in 1892. Rochester, New York, can claim her, for she attended the Mechanical Institute there and received a diploma from that institution. Wisconsin can claim her, for she taught home economics for three years in the high school of Fond du Lac. Connecticut can claim her, because she took her doctor's degree at Yale in 1909, under Dr. Lafayette Mendel. New York and Teachers' College, Columbia University, have, of course, the greatest claim to her for it was there that she carried out most of her life's work. All of us in nutrition and dietetics can, however, claim her, for we have all benefited in some way from her life and teachings.

Such, in brief, is a partial and inadequate picture of the woman whom we honor tonight through the award of the fellowship which bears her name.

The person chosen for the award must be one who has already had fundamental training in the field of nutrition, who has already demonstrated her interest and ability in this field, and who shows promise of making a valuable contribution to it, and thus do honor to the one whose name the fellowship carries.

The recipient of the award for 1955, Myrtle L. Brown, appears amply to fulfill these qualifications. Miss Brown has received her education thus far in Booker T. Washington High School, Columbia, South Carolina; Benedict College, Greensboro, North Carolina, where she received her bachelor's degree; and Pennsylvania State College, where she received her master's degree, and where she is now working toward her doctorate. Her major interest throughout has been in biochemistry and nutrition and their background fields.

She has already held professional positions in the nutrition field; first, as school lunch manager in Columbia, South Carolina, and for the last six years as research nutritionist in the Human Nutrition Research Branch of the U. S. Department of Agriculture.

Miss Brown is a member of several honorary societies: Omicron Nu, Iota Sigma Pi, Sigma Delta Epsilon, and Phi Kappa Phi. She is a member of the American Chemical Society, and, of course, of The American Dietetic Association.

[1] Todhunter, E. N.: Biographical notes from the history of nutrition. Mary Swartz Rose—October 31, 1874–February 1, 1941. J. Am. Dietet. A. 29: 1013, 1953.

GERALDINE G. GARDINER BECOMES FOURTH WINNER OF LYDIA J. ROBERTS ESSAY AWARD

For her essay, "Nineteenth Century Leaders in Infant Feeding," Geraldine Graves Gardiner of St. Louis received the fourth Lydia J. Roberts Essay Award of $500 at the Annual Banquet of The American Dietetic Association on October 21. Presentation was made by Ethel Austin Martin, Nutrition Consultant, who said, in part:

Tonight for the fourth consecutive year a winner will claim the Lydia J. Roberts Award for the best essay in the field of the history of nutrition and dietetics. The spotlight, on this occasion, shines in three directions: on the donor, who has made the award possible; on the recipient, who has competed successfully for it; and on the honoree whose name gives it special significance.

The donor, the Gerber Products Company, has annually since 1951, made available to The American Dietetic Association a liberal sum for this award. In so doing it has encouraged the efforts of the Association's Committee on History of Nutrition and Dietetics. In the nine years of its existence, this Committee has succeeded in making us see the importance of knowing the past in nutrition as a basis for interpreting the present, and of looking on current happenings as history in-the-making. These are signs that we are coming of age.

It is fitting that the name of the honoree, Lydia J. Roberts, should be associated with an award which fosters an appreciation of history because she began to help in the shaping of the history of nutrition and dietetics even before the birth of this Association. She continues today to be out in front blazing trails which will mark the way for future workers just as she has mapped paths for the present generation. This seems a suitable occasion, therefore, to reminisce about some of these history-making events.

Her work in this country, which largely centered around the University of Chicago, is a logical starting place. It was

there that she offered the first university course designed to give students an opportunity to deal directly with the problems of nutrition in childhood and practical methods of dealing with them. Out of this course grew her book, *Nutrition Work with Children*, the first edition of which was published in 1927. It was the first book to include, in one volume, the basic understandings of child nutrition and the application of educational procedures. The impact of this book on the early development of nutrition education is well known.

In 1940, Dr. Roberts was the first to apply the workshop technique to the field of teacher education in nutrition. The members of her first workshop were sixty-six public school teachers at different grade levels from two counties in Michigan. The next year she conducted at the University of Chicago the first workshop in nutrition education for professional nutritionists. Both established patterns of workshop procedure, which are closely followed today.

Along with these firsts in the classroom, Dr. Roberts was constantly engaged in a new type of nutrition research, designed to explore such practical questions as: the factors—psychological and other—which affect the eating habits of children; the nutritive needs of normal children of different ages as revealed by actual food intake studies; the influence of classroom instruction in nutrition on choice of school lunches; the effect on the nutritional status of institutional children of adding certain basic foods to a near-adequate diet, and the result when the diet was made entirely adequate; and, not to be overlooked, the varied problems of adult nutrition which were under investigation routinely. The findings of these studies have enriched nutrition literature, and the methods employed have been adapted by the workers of today. Her interpretive articles for teachers, nurses, social workers, parents, and the general public have made their own brand of history by setting an example for clarity of thought and effectiveness of presentation.

Meantime, history was being made outside the classroom and laboratory. Dr. Roberts has served on practically every major committee concerned with national nutrition policies. These include: the Food and Nutrition Board of the National Research Council, the Council on Foods and Nutrition of the American Medical Association, and the Scientific Advisory Committee of the Nutrition Foundation. Her contributions through these channels have been many. One serves as an example: She was chairman of the subcommittee of the Food and Nutrition Board which formulated the first Recommended Dietary Allowances. The historical significance of this achievement lies in the fact that in two revisions of the original Allowances, they have undergone almost no major changes.

There were other outside activities which fit into the historical pattern, such as the studies in Kentucky and Gary for the Children's Bureau, bulletins developed for different government agencies, and leadership in White House Conferences and in national nutrition conferences and institutes. All have left their imprint on nutrition and dietetics of today.

This record of activity, incomplete as it is, would seem to cover more than enough to occupy one very full lifetime—not so in Dr. Roberts' case. She was to have many more history-making experiences in an entirely different setting.

Early in 1943 she visited Puerto Rico at the request of M. L. Wilson, then Director of the National Nutrition Program, to survey nutrition problems in the island and the government's activities in dealing with them. She recommended greater coordination of effort among agencies and proposed, as a preparatory step, a workshop for representatives in related fields. A few months later Dr. Roberts was recalled to Puerto Rico to implement her own proposal. The workshop was attended by sixty-six persons from all island agencies and groups having a stake in the nutrition program: extension agents, vocational agriculture and home economics teachers, school principals and teachers, social workers, and nurses.

An immediate outgrowth of the workshop was the reorganization of the wartime nutrition committee into a representative professional group which became then, and remains today, the "voice of nutrition" in Puerto Rico. Many of its accomplishments are well known. The committee, for example, is responsible for legislation which requires the fortification of all white flour and rice imported into the island. It has sponsored vigorously a home food production program to improve meals in low-income homes, and it has recently developed a "Basic 5" meal planning chart as a guide to better meal selection. From the beginning, Dr. Roberts has been a vital force behind every activity of the Committee.

On her first visit to the island, Dr. Roberts met the Chancellor of the University of Puerto Rico who persuaded her to return later to direct a revision of the home economics curriculum. This she did and shortly thereafter assumed the chairmanship of the department. As a basis for the curriculum revision, a study was made, under her direction, to learn specifically how families live at various socio-economic levels in Puerto Rico. The final report was published under the title, *Patterns of Living in Puerto Rican Families*. Although the main application is local, it has wider significance as a pattern of approach to problems of curriculum planning. In Puerto Rico, the findings have also become a basis for service and education to all agencies working for improvement of living conditions.

Great strides have been made by the Home Economics Department of the University of Puerto Rico. In nutrition and dietetics, for example, the number of majors has risen from five to forty-four at the present time. Largely through her efforts, a dietetic internship has been established in Puerto Rico, the first outside the continental United States.

News about the new nutrition program in Puerto Rico flashed through the Latin American-Caribbean area and stirred it to action. Dr. Roberts was soon beset with requests for help in other places. Among the first was a call from the Inter-American Institute of Agricultural Sciences at Turrialba, Costa Rica (a project of the Organization of American States) to plan how to develop a home economics program in its Technical Cooperation Program in Latin America. She not only counseled the Institute on plans but she consented to give special courses and workshops at the University of Puerto Rico for selected workers from the various countries. To date she has given such training to at least a half dozen different groups totalling more than one hundred representative persons—from Mexico, from every country in Central and South America, and from about twelve of the Caribbean colonies.

Dr. Roberts has also participated officially in educational conferences at different points in the Caribbean and twice she has represented the United States in Conferences on Nutrition Problems in Latin America, one in Rio de Janeiro, Brazil, and one in Caracas, Venezuela.

British neighbors in the Caribbean soon began to covet for their people the advantages enjoyed by American groups. As a result, last year Dr. Roberts was invited to Jamaica to plan and organize a course in home economics for the university there. This was the first to be scheduled in the British colonies in the Caribbean.

As a result of her contributions to the Caribbean colonies, the British Colonial Office has now invited her to spend two to three months this fall and winter, in Uganda, a colony in east Central Africa on the equator. Under the auspices of the Food and Agriculture Organization of the United Nations, she will survey home economics and related fields and consult with leaders of women's groups in the Colony. We shall wait with interest to see what worlds she chooses to conquer next.

And now it is my pleasure to announce the winner of the

1955 Lydia J. Roberts Essay Award: Geraldine Graves Gardiner of St. Louis. Hers was the winning essay on the subject chosen for this year: "Nineteenth Century Leaders in Infant Feeding." Her essay will be published in full in a forthcoming issue of the JOURNAL.

Mrs. Gardiner has her bachelor's and master's degrees from the University of Minnesota, where she also served her dietetic internship at the University Hospitals. Her early positions were in hospitals, but she soon evidenced an interest in social welfare. In 1940 she joined the staff of the Minnesota State Division of Welfare where she remained until 1953. Since then she has been employed by the Social Planning Council of St. Louis and St. Louis County as the Associate Secretary of the Health and Hospital Division.

In her present position Mrs. Gardiner works with groups helping to coordinate health education activities, such as health education programs on public housing projects and with a local committee that is concentrating its efforts on the Health Careers Project of the National Health Council. In addition she works with committees in the fields of social work, nursing education, and family agency food budgets.

Felissa J. Bracken, winner of the first Lydia J. Roberts Essay Award in 1952, was accorded honorable mention in this year's competition for her especially well written paper on the same topic, "Nineteenth Century Leaders in Infant Feeding."

BIOGRAPHICAL NOTES FROM THE HISTORY OF NUTRITION

Eugen Baumann—December 12, 1846–November 3, 1896

That the trace element iodine is essential for the normal functioning of the thyroid gland is an accepted part of nutrition teaching today. We know that where there is a deficiency of iodine in soil and water, foods grown in that area will be deficient in iodine, and that when a population depends on such soil for its food supply, endemic goiter is a frequent result. This is one of the few, if not the only clear-cut instance of a direct relationship between soil and human disease. Such discoveries as these are part of the twentieth century science of nutrition, for it was not until the extensive experiments of Marine and Kimball in 1917 on school children in Akron, Ohio, that it was clearly demonstrated that lack of iodine was the immediate cause of endemic goiter.

No scientific discovery is made immediately and single handed. Many investigators made their contributions to this knowledge of the prophylactic effects of iodine beginning with the French chemist, Courtois, in 1811, who discovered this element and named it from the Greek word meaning "violet," which is descriptive of the vapor of iodine.

The only use which the body is known to make of iodine is in the thyroid gland, for the production of the hormone, thyroxin. The first to discover the presence of iodine in the thyroid tissue was a German chemist, Eugen Baumann. Baumann was working with thyroid tissue when he observed that the residue after acid hydrolysis gave a brownish color which he thought might be caused by iodine. Laboratory tests showed the presence of iodine. Careful testing of all laboratory agents that had been used showed that they were free from iodine; Baumann concluded that the iodine was present in organic combination in the thyroid gland. However, it was not until 1914 that Kendall isolated a crystalline, iodine-containing substance from the thyroid and named it "thyroxin."

Eugen Baumann has been described as a typical German—big, broad shouldered, bearded, with fair hair and blue eyes. He was neat and exact—so much so, that it is told on one occasion he was most upset by seeing a match lying on the lecture room floor. Physiologic chemistry became his field of interest, and he lived for his work in the laboratory.

Baumann was born December 12, 1846, in Cannstatt, Germany, the son of an apothecary. After high school, he entered the Stuttgart Polytechnic Institute and studied chemistry, pharmacy, and natural sciences. In 1870, he qualified as a pharmaceutical chemist in Tubingen. Here he met the great physiologic chemist, Felix Hoppe-Seyler, and became interested in physiologic chemistry. After obtaining his Ph.D., he went to Strasbourg as first assistant to Hoppe-Seyler. In 1873, he was appointed Director of the Chemical Laboratory, Physiological Institute of Berlin, where he stayed until 1883 when he became Professor of Chemistry at Freiburg. Baumann published many papers which were valuable contributions to physiologic chemistry and clinical medicine. He discovered sulphonal, trional, and phenacetin; he was interested in alkaptonuria, which he recognized as an anomaly of metabolism, and he succeeded in producing homogentisic acid.

Eugen Baumann died suddenly of a coronary occlusion on November 3, 1896.

REFERENCE: Bett, W. R.: Some thyroid pioneers. 7. Eugen Baumann. (1846–96) Med. Bookman & Historian 2: 215, 1948.—*Contributed by E. Neige Todhunter, Ph.D., Dean, School of Home Economics, University of Alabama, Tuscaloosa.*

Current Comment

Six Years' Experience with Airline Food Service in the Hospital

JOSEPH T. GRECO and
HENRIETTA BECKER

Barnes Hospital
St. Louis

In September 1949, the first application of "airline type" food service to patients' food service in a hospital was inaugurated at Barnes Hospital, St. Louis. Now, after six years' experience, the Director of the hospital, Dr. Frank R. Bradley, has appraised the program: "Airline food service has proved so successful that it is being extended to the hospital's entire 1000 beds. By this method we have been able to convert to a centralized food service. Patients' food is served more quickly than in the past, and the temperature control of the food is more effective. This method eliminated the serving pantries, and the space vacated provides room for semi-private patient beds or for conversion to other purposes."

To meet the requirements of light weight and limited service, the airlines developed special equipment capable of holding food at correct temperatures for unpredictable lengths of time and under variable conditions. We have adapted this equipment to use in the hospital situation, at the same time changing our methods of operations to meet the demands of the equipment itself.

Flexibility is the basic characteristic of airline food service. As yet equipment designs and materials have not been standardized or "frozen," either among the airlines or the hospitals which use them. This in itself is a distinct advantage, for it is sufficiently flexible that it can be adapted to any given situation with minimum disruption of routine service or facilities as well as with a minimum expenditure of money and effort. Its flexibility goes well beyond the physical equipment to application to regular, modified, or individual diets.

Because the area in the main kitchen was limited, expansion of service meant achieving greater efficiency with little or no increase in physical facilities. We therefore made an intensive analysis of traffic flow—both of food products and personnel—including attention to individual tray service and the selective menu. These studies indicated that, ideally, we might achieve simplicity in a complex situation by adopting straight-line traffic flow from food pre-preparation, to processing, on to assembly, and finally to transportation. We visualized an assembly-line production system with receipts of raw food products at one end of the line and delivery of finished food products to the patient at the other end.

Once having accepted this principle, we embarked on an extensive program of remodeling and relocation of functions, since the new layout required the almost complete reorganization of main kitchen activities.

The new system is known, in technical terms, as "progressive linear traffic flow." What does this mean? It means that straight-line assembly production methods, originally used in the automotive industry, can be applied to food preparation and processing. It means improved control and speedier handling of food products. It means that top performance can be achieved while raising efficiency, with the net result being large savings in operational costs.

To effect this straight-line assembly, it was determined that, essentially, our operations could be divided into seven successive activities: receipts and storage, pre-preparation, processing, assembly, transportation, return transportation, and clean-up. Since the first three are operations familiar to all dietitians, we shall proceed to a description of the assembly line function. It is at this point that the application of the airline type of operation and equipment as begins to affect the operations of the dietary department and its contributions to the finished product, namely, the serving of the individual patient's tray, can be seen.

Use of airline type service in the hospital involves a special version of the assembly operation customarily found in a centralized food service. In our situation assembly is broken down into two parts—

Large trays containing cold foods, from which airline type trays are pre-assembled

Pre-assembled tray ready to be placed on rack in cart to be taken to floor galley

pre-assembly which is done in the main kitchen and final assembly of patients' trays which is accomplished in the floor galleys.

The link between these two operations is the airline-type, specially designed carts which carry hot food, cold food, beverages, and partially assembled trays to the floors.

PRE-ASSEMBLY

In the pre-assembly section of the main kitchen, we carry on the activities of packaging, wrapping, and collecting cold items. Bread, salad, salad dressing, cream, jellies, and so on are packaged; silverware is wrapped; and salads made. All are collected on large kitchen service trays and stored—in refrigerators where necessary—until needed. These activities may be done at any time 2 to 4 hr. prior to serving time. Thus, we are able to schedule an even work spread and avoid to a large extent, last minute rushes.

Later, when serving time approaches, the large trays are taken to stations in the main kitchen where the various materials are assembled on individual trays, which in turn are placed on racks in the food cart. Refrigeration for the rack sections of these carts is obtained by dry ice. Electrical outlets on the carts also provide for heating to keep hot foods hot.

With this system, we have found that personnel can be trained to complete between sixty and seventy-five trays an hour. At the same time, close supervision of portion control is possible.

At another assembly unit, individual portions of hot food are served onto dinner plates, which are placed in a heated oven. In this unit, too, beverages are poured into appropriate jugs.

With this pre-assembly in the main kitchen of both hot and cold foods accomplished, the heated oven and beverage jug are placed on the cart in which the trays have been stored, and the cart is ready to be taken to the floor galley.

Loaded food cart, showing pre-assembled trays, ready to be taken to floor galley

This method of assembly, we have learned, makes possible the integration of all diets—whether regular, modified, therapeutic, or calculated—into a central assembly system, thus eliminating the need for specially trained personnel other than dietitians.

FINAL FLOOR ASSEMBLY

As soon as the loaded food carts are dispatched from the assembly unit of the main kitchen, floor dietitians assume supervision over them and over the personnel accompanying them. On arrival at the galley, which is considered part of the nursing division, the food cart is plugged into an electrical outlet, and the final tray assembly begins.

The floor galley serves as the place of final tray assembly and inspection. It contains an ice-making machine, a household sink complete with disposal and built-in two-plate burner, a small refrigerator, and a hot food oven and tray carrier for delayed servings. It is analogous to the small galley on a plane, although it contains somewhat more equipment. It also serves the needs of the nursing division.

Under the supervision of a dietitian, one dietary aide in the galley completes the tray assembly, placing the hot dinner plate (taken from the heated oven on the cart) on the tray containing cold food (removed from the lower racks of the cart) and pouring the beverage. On completion of an assembly and inspection by the dietitian, another dietary aide promptly serves the patient. At no time is there a surplus of completely assembled trays waiting to be delivered to the patient. Thus, as soon as a tray is completed and inspected, it is served; and the patient receives the food at its approximate desired temperature.

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RETURN TRANSPORTATION AND CLEAN-UP

After the meal, the dietary aide collects the trays from the bedsides and returns them to the galley, where all except those served to patients on calculated diets or in isolation, are scraped and rinsed of food leavings. In instances where calculations must be recorded, the tray is returned to the general clean-up area where all residues are weighed. Trays served to patients in isolation are taken by the nurse to the utility room where dishes are scraped and both the trays and dishes wrapped in a paper bag to be taken by dietary personnel to the general dishwashing room where they are washed in accordance with prescribed techniques.

When the dietary aide has completed the chore of scraping and rinsing used trays, she sweeps the galley floor and returns the food cart, loaded with the dirty trays, glasses, silverware, and dishes, to the general clean-up area of the main kitchen. Here general clean-up, dishwashing, and cart sanitizing is done under central supervision. Then the carts are returned to central storage, and the dietary aide returns to her assigned task, perhaps in the dishwashing unit, perhaps in pre-assembly, perhaps to assembly.

This routine of assembly, transportation, service, return transportation, and clean-up comprises our latest development in adapting airline type food service in Barnes Hospital. Through what we call "creative engineering," we have been able to keep pace with the tremendous demands that have accompanied our expansion, and we are now feeding 8000 people a day with hot food hot and cold food cold. The adoption of these assembly line techniques and airline food service equipment has permitted a tremendous boost in production of the finished product—the individual patient's tray—with no apparent increase in physical facilities.

Employee Attitudes Are Surveyed to Improve Personnel Relations

JEAN SHAFFER

University of Kansas Medical Center
Kansas City, Kansas

Communication means the transmission and reception of information, ideas, attitudes, and feelings. It is the basis for development of the mutual interests which exist among those involved in any working situation. In any enterprise, including food production, the measure of the effectiveness of this communication is the attitude of the employees in meeting the standards for efficiency and quality of product which management has established.

As dietitians, we spend much time and money gaining technical knowledge required to manage a food service, yet we know so little about what actually is on the minds of our employees. We can't see attitudes as we can material things. Too often, we assume that if they don't complain, they are satisfied. The employee who expresses his complaints (or his satisfactions) openly to the dietitian is the exception. Nevertheless, what our employees think of us and of the organization we both work for largely determines the quality and quantity of the work they do.

Our relationship with employees is one of authority over them. Because they are somewhat dependent upon our good-will, they may hesitate to express themselves, especially if their feelings involve criticisms. Perhaps, too, we do all the talking and don't listen carefully enough to what they do say.

In many organizations, the channels of communication are clogged, with the immediate result being poor labor relations and the final result poor quality of product produced by the organization. The problem of keeping these channels of communication open is a challenge today, not only in the hospital field, but in business and all other areas where employee-employer relationships exist.

We at the University of Kansas Medical Center decided that an attempt should be made to improve first our communications with our employees, then our labor relations, with the ultimate goal, of course, of improved food service to patients. The first step was to conduct a survey of our employees' attitudes toward their jobs, their supervisors, the hospital administration, and general working conditions—a technique which has been successfully used in industry for a number of years.

All two hundred of the employees of the dietary department participated in the survey, which was administered in the form of a questionnaire, developed by a management consultant.[1] Slight adaptations were made to make it fit the hospital situation. The questions in the survey are presented in the accompanying box.

The dietitian in charge of employee training conducted the surveying, administering the questionnaire to small groups. Employees were spread out through a large room, and no discussion of questions was permitted among employees during the test.

Employees were assured the strictest anonymity, and frank answers were invited. Employees were also encouraged to write in any comments they might have.

EVALUATING THE REPLIES

Answers which were checked "always" or "usually" were judged favorable, while a reply of "sel-

[1] Prepared by Travis Elliott for Institute on Management, Texas Restaurant Association, 1954.

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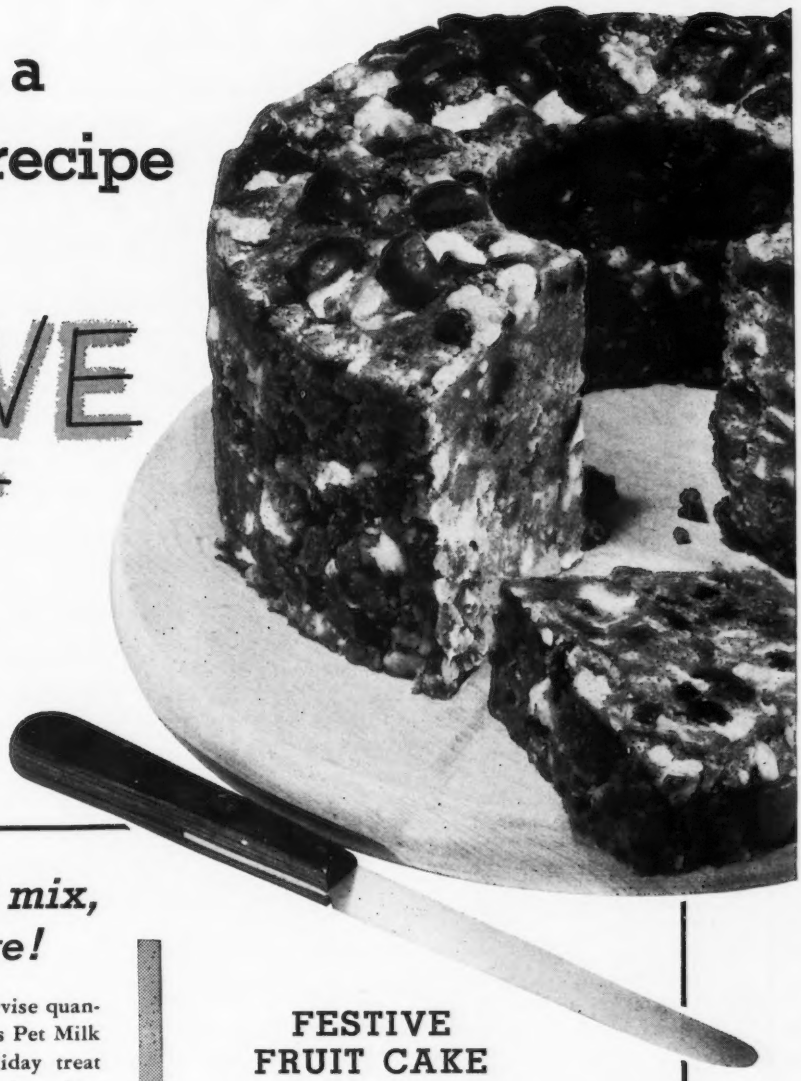

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And the "success secret" is Pet Evaporated Milk . . . the *double-rich* milk that binds the mixture together, blends with other ingredients to give Festive Fruit Cake its perfect texture and mellow-rich flavor. No other form of milk makes Festive Fruit Cake like this . . . yet Pet Milk costs less, generally, than any other form of milk.

FESTIVE FRUIT CAKE
(FOR 50)

- 2 cups Pet Evaporated Milk
- 1 pound Marshmallows, finely cut
- ¾ cup Orange Juice*
- 3 pounds Graham Crackers, rolled into fine crumbs
- 1 teaspoon Cinnamon
- 1 teaspoon Nutmeg
- ½ teaspoon Cloves
- 1 quart dark or golden seedless Raisins
- 2 cups finely cut Dates
- 3 cups broken English Walnuts
- 3 cups ready-mixed cut-up Candied Fruit, bulk or canned**

Line bottoms and sides of four 5-cup loaf or tube pans with waxed paper. Put Pet Milk, marshmallows, and orange juice into a large bowl and let stand until needed. Put graham crackers, cinnamon, nutmeg, cloves, raisins, dates, walnuts and candied fruit into mixer bowl. Add milk mixture and mix at low speed until crumbs are moistened. Press mixture firmly into pans. If desired, garnish with candied fruit and nuts. Cover tightly. Chill 2 days before slicing. Keep in cool place. Makes 9 pounds.

*Alcoholic flavoring can replace the orange juice if desired.

**You can replace the 3 cups ready-mixed candied fruit with 1⅓ cups finely cut candied pineapple, 1⅓ cups finely cut candied cherries, and ½ cup finely cut candied orange peel.

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Employee Attitude Survey

Check one answer:

1. Does your supervisor treat you "fair and square"?
   Always_____ Usually_____ Seldom_____ Never_____
2. Does your supervisor know and understand about your job?
   All about it_____ Quite a bit_____ Very little_____ Nothing_____
3. When you do a good job, does your supervisor give you credit?
   Always_____ Usually_____ Seldom_____ Never_____
4. Does your supervisor criticize you in the presence of other employees?
   Always_____ Usually_____ Seldom_____ Never_____
5. Do you have too many supervisors?
   Always_____ Usually_____ Seldom_____ Never_____
6. Does your supervisor take a friendly interest in your personal problems?
   Always_____ Usually_____ Seldom_____ Never_____
7. When a new job is to be done, does your supervisor ask for your suggestions as to ways of doing it?
   Always_____ Usually_____ Frequently_____ Seldom_____ Never_____
8. Do you feel that your work is appreciated?
   Always_____ Usually_____ Seldom_____ Never_____
9. Do you feel that as a rule promotions are handled fairly?
   Always_____ Usually_____ Seldom_____ Never_____
10. Does your supervisor tell you how you are getting along in your job?
    Often_____ Now and then_____ Seldom_____ Never_____
11. When an employee makes a complaint, does he get a "square deal"?
    Always_____ Usually_____ Seldom_____ Never_____
12. How do you feel about this institution as a place to work?
    Best there is_____ Better than average_____ Not so good_____ Unsatisfactory_____
13. How do you like your work?
    Most interesting_____ Fairly interesting_____ Slightly interesting_____
    Dull and uninteresting_____
14. Does your supervisor want your suggestions for making the job better?
    Always_____ Usually_____ Seldom_____ Never_____
15. Do you understand your job and know what you are supposed to do?
    Always_____ Usually_____ Seldom_____ Never_____
16. Are you provided the necessary things—supplies, equipment, materials, and so on—to do your job?
    Always_____ Usually_____ Seldom_____ Never_____
17. Do you get all the information about the policies, rules, and regulations that you want?
    Always_____ Usually_____ Seldom_____ Never_____
18. In the long run, do you feel that you are paid about the same as others in this hospital who are doing about the same kind of work?
    Always_____ Usually_____ Seldom_____ Never_____
19. How does your pay compare with others outside this institution doing the same kind of work?
    Better_____ About the same_____ Somewhat lower_____ Much lower_____
20. Does the hospital try to make your job as safe and comfortable as possible?
    Always_____ Usually_____ Seldom_____ Never_____
21. Are you told in advance about changes which affect you and your work?
    Always_____ Usually_____ Seldom_____ Never_____
22. When a new job is to be done, does your supervisor help you to learn how to do it?
    Always_____ Usually_____ Seldom_____ Never_____
23. As a rule, do you think the workers here give a full day's work for a day's pay?
    Always_____ Usually_____ Seldom_____ Never_____
24. As a rule, are you given the kind of work which you can do best?
    Always_____ Usually_____ Seldom_____ Never_____

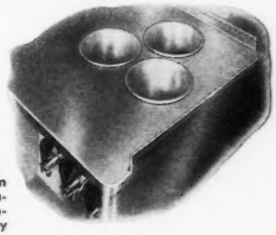
You are invited to give suggestions and comments below:

NEW *Ideal* MEALMOBILE with... built-in BEVERAGE DISPENSER

Add speed and ease in your centralized food service system with this new unique Mealmobile. It delivers, with "kitchen-control," 20 meals of hot and cold foods . . . and dispenses both hot and cold liquids. The new Ideal Mealmobile is truly a new plus in food serving efficiency!

SEAMLESS TOP GUARD

Eliminates dirt catching crevices. Open corners permit easy cleaning. Extended edge of guard prevents articles carried on top deck from sliding off in transit.



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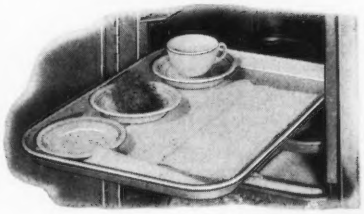

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dom" or "never" was considered an unfavorable response. With this rating device, the score for each administrative unit in the department was determined, using the total number of people in each unit as 100 per cent.

The questions were then classified in nine groups, indicating nine areas of employee relations, as follows:

(a) Supervisors' showing appreciation for work employees do (questions 3, 8, 10).

(b) Supervisors' attitude toward personal and work problems (questions 1, 5, 11).

(c) Supervisors' understanding of the job and help given in training (questions 2, 22).

(d) Employees' feeling toward supervision (questions 4, 5).

(e) Encouragement of employees to participate in changes or make suggestions for bettering operations (or job) (questions 7, 14, 21).

(f) Adequacy of physical facilities (questions 12, 16, 17, 20).

(g) Employees' understanding and satisfaction gained from job (questions 13, 15, 24).

(h) Employees' evaluation of their wages (questions 18, 19).

(i) Employees' feeling about fairness of promotions (question 9).

The fact that the percentage of responses varied between administrative units suggests good reliability for the questionnaire (Table 1). Actually, the feeling toward supervision and the supervisors' understanding of employees, particularly, were found to vary greatly in the different units. The attitudes in the smaller groups were generally more favorable than in the larger units.

TABLE 1

Possible scoring for two units

AREAS OF EMPLOYEE RELATIONS	PERCENTAGE OF RESPONSES			
	Administrative Unit No. 2		Administrative Unit No. 1	
	Favorable response	Unfavorable response	Favorable reponse	Unfavorable response
Supervisors' appreciation of work	86	14	52	48
Supervisors' understanding of personal and work problems	90	10	58	42
Training	81	19	73	27
Feeling toward supervision	83	17	33	67
Employee participation—"being in on the know"	84	16	42	58
Adequacy of physical facilities	94	6	89	11
Job satisfaction	94	6	91	9
Wages	48	52	33	67
Promotions	53	47	60	40

USING THE RESULTS

Conducting the survey was only the first step. If the information was to be of value, changes should be made in areas where attitudes were obviously not as favorable toward management as we would like. The director of the dietary department shared with all dietitians and supervisors the results from their units, and in addition, the training dietitian also discussed the results with employees in each unit.

An unfavorable answer from 25 per cent or more of those responding in any one unit indicated an area in which the dietitian or supervisor could perhaps show improvement.

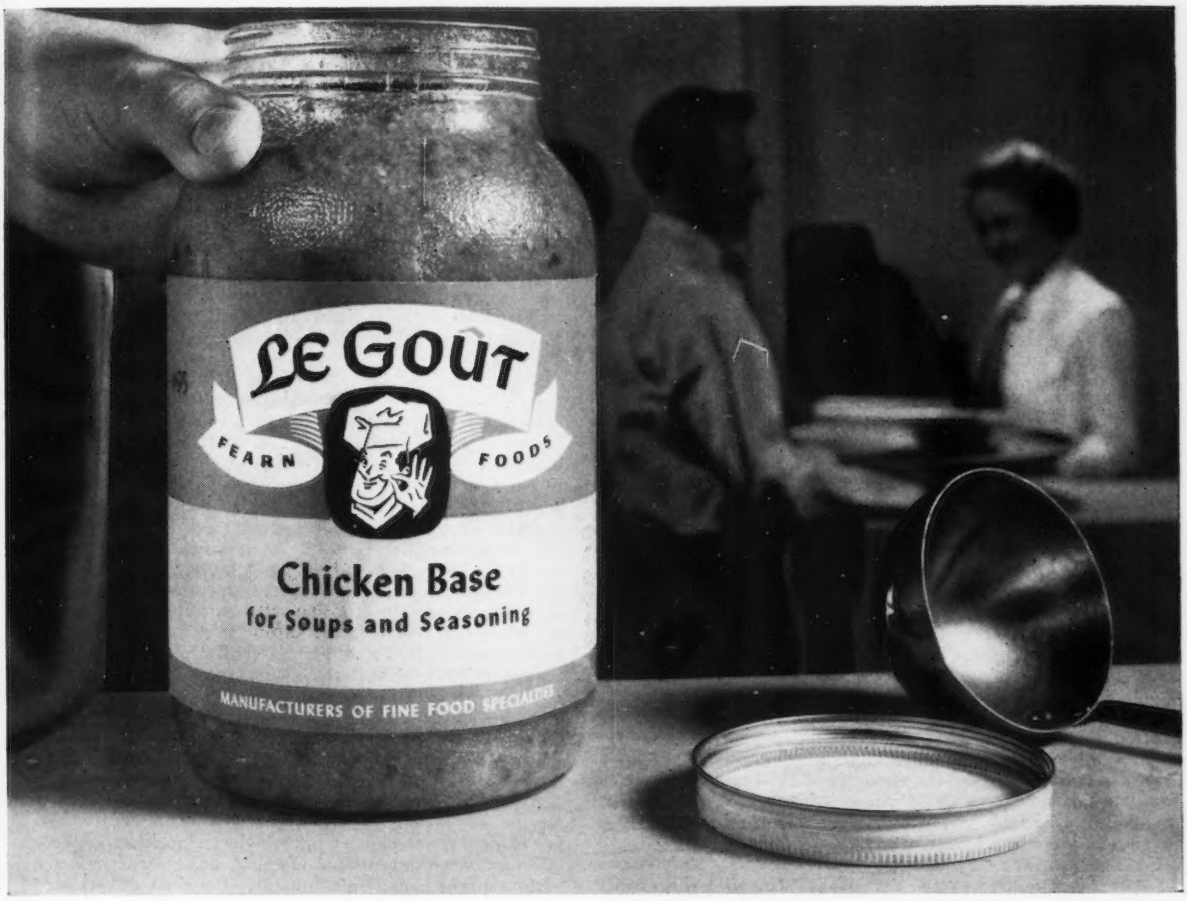
There are, of course, multiple causes for unfavorable responses, some of which are beyond the control of the supervisor. It should be borne in mind, too, that the questionnaire deals with two things—attitudes and situations. Interpretations of this type of survey must always be made with caution. It was difficult to determine, for example, whether a negative response indicated a chronic "gripe" or a bad situation. However, a more accurate picture is shown by going through the responses on the scale both horizontally and vertically.

The attitude on promotions was noted to be especially bad. This problem was therefore discussed with the employees and a new system has now been adopted in which the dietitian posts notices of vacancies and lists job requirements for the jobs which are open. She interviews applicants, makes the final decision, and then explains to those applicants who are rejected why they do not qualify.

The adequacy of physical facilities, equipment, and materials was an area which scored consistently high. Does this perhaps indicate that we tend to stress material things and forget that one of our responsibilities as dietitians is the development of happy and well adjusted employees?

Employees' attitudes are a decisive factor in the success of any dietary department; thus, it is vitally important that we know what these attitudes are and take steps to develop attitudes which produce a group with good *esprit de corps*. If the results from such a questionnaire are evaluated and used cautiously and democratically, and are reviewed periodically, they can be very helpful. When dietitians and employees can work together as a team, then every worker will know at all times what his job is, that it is worth doing, and that it is being well done. This can be achieved through effective communications—planned, systematic, and purposeful—in which the employee attitude survey can be made to play an important role.

Potato flakes, from which mashed potatoes—with varied texture from mealy to creamy and smooth—can be made by adding hot milk, have been developed by U.S.D.A. scientists.



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Book Reviews

Recipes—Type A School Lunches. U. S. Department of Agriculture PA-271. File—5 by 8 in. recipe cards. Washington, D. C.: Government Printing Office, 1955. Price $2.25.

A new recipe file, based on the needs of the school lunch operator, has just been published by the Food Distribution Division, Agricultural Marketing Service, Department of Agriculture, in cooperation with state school lunch supervisors.

The file is divided into ten sections, including soups, main dishes, sandwiches, salads and salad dressings, breads and cereal products, sauces and gravies, vegetables, and fruits and other desserts. The recipes, on 5 by 8 in. cards, have an excellent, easily-read format with concise, stepwise directions. Amounts of ingredients are given both in weights and measures, and specific directions for portioning or cutting are included. Basic recipes give several suggested variations in easy-to-use form. All recipes are on the basis of 100 portions, and a blank column is provided on each card for the supervisor to write in the calculation for the yield which will meet her particular needs.

In addition to approximately four hundred recipes, the file includes suggested menus built around protein-rich recipes, procedures for adjusting recipe yield, tips on portion control, information for substituting evaporated and dry milk for fluid milk, directions for using dried eggs, and other helpful suggestions. Directions for making simple, basic mixes for use in a variety of products should be helpful, especially to the supervisor who has little assistance in preparing foods.

The recipes were developed by the Human Nutrition Research Branch of the Agricultural Research Service, U.S.D.A., and by the Fish and Wildlife Service, Department of the Interior. Many utilize products which have frequently appeared on the Surplus Commodities lists and should be most useful to the school lunch supervisor who is concerned with offering the child lunches which are attractive, nutritious, and moderately priced.—*Pearl Jackson Aldrich, Ph.D., Associate Professor of Research, Michigan State University, East Lansing.*

The Slim Gourmet, or The Joys of Eating. By Martin Lederman. New York: Simon and Schuster, Inc., 1955. Cloth. Pp. 240. Price $3.50.

Here is a book which will be of interest to the intelligent obese patient. It is written by a layman who makes no pretense of being an academic authority. He is, however, a gourmet in the true sense of the word.

Unfortunately, he denounces the "scientific" approach in such terms as to make it sound most unpalatable, justifying this on the basis of uncertainties regarding precise requirements. Granted that we cannot be precise about mineral and vitamin requirements; however, it would seem to be a somewhat radical approach to disregard this information as completely as this author had done.

It *is* possible to reconcile the enjoyment of food with scientific knowledge, in view of all the alternates which are available for most key food groups. Some of the menus presented in this book, although they may represent pleasant eating, do not meet the Recommended Dietary Allowances. Since most "dieters" will have to adopt new patterns of eating to maintain their weight loss, it seems foolish to ignore these standards during the reducing period. If reducing and weight maintenance were not a long-term program, the hazard would not, of course, be as great.

Mr. Lederman believes he proves one may have his cake and eat it, too!—*Community Nutrition and Diet Therapy Sections, Washington State Dietetic Association, Norma MacRae and Elsie Bakken, Chairmen.*

The Care of Your Skin. By Herbert Lawrence, M.D. Boston: Little, Brown & Co., 1955. Cloth. Pp. 99. Price $2.50.

Hardly any ailment has given rise to more "miracle cures" than acne. Equally confusing to the person afflicted are the numerous misconceptions about its origin or the factors precipitating its onset. Certainly a straightforward discussion of the cause and recommended treatment, such as found in this book, is most acceptable.

The role of nutrition is presented in a non-sensational manner. Emphasis is placed on a "well-balanced diet." The discussion of the subject is scientifically accurate and clear cut. There is, of course, much individual variation in the reaction to certain foods, some appearing to precipitate an outbreak of skin eruption. The author urges a careful evaluation of the situation rather than jumping to false conclusions and unnecessarily omitting any nutritionally important food.—*Elizabeth K. Caso, Instructor in Nutrition, Harvard School of Public Health, Boston.*

Education for the Professions. Organized and edited by Lloyd E. Blauch. Washington, D. C.: Government Printing Office, 1955. Cloth. Pp. 317. Price $1.75.

Education for the Professions is a new hard-bound book prepared by the Office of Education, U.S. Department of Health, Education, and Welfare. It is a comprehensive survey of all of the recognized professions and includes not only information on educational training, but statistics on the various professions. Unfortunately, those on dietetics do not always reflect actual conditions. The chapter on home economics education is somewhat general, without specifics being given for the various specialties within the larger field, although as an over-all survey, it seems to present an adequate picture.

The first two chapters, "The Professions in the United States" and "Professional Education in the United States" are especially well written, presenting in an enlightening fashion the development of the professions, definitions and earmarks of the professions, licensure, civil relationships and responsibilities of the professional person, accreditation, patterns of professional education, and other topics pertinent to the titles of the chapters. A study of these two chapters by persons preparing for the professions might well serve to instill an understanding and appreciation of the fields which they hope to enter.

RECENT BOOKS RECEIVED

Feeding Your Baby and Child. By Benjamin Spock, M.D., and Miriam E. Lowenberg, Ph.D. New York: Duell, Sloan and Pearce, 1955. Cloth. Pp. 226. Price $3.75.

The Food Program in Children's Hospitals. Springfield, Ill.: Illinois Department of Public Welfare, 1955. Paper, spiral bound. Pp. 84. Apply.

The Molly Goldberg Cookbook. By Molly Goldberg and Myra Waldo. Garden City, N. Y.: Doubleday & Company, Inc., 1955. Cloth. Pp. 320. Price $3.95.

Peptic Ulcer. Diagnosis and Treatment. By Clifford J. Barborka, M.D., and E. Clinton Texter, Jr., M.D. Boston: Little, Brown and Company, 1955. Cloth. Pp. 290. Price $7.

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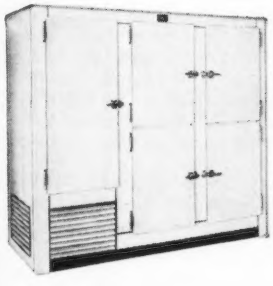

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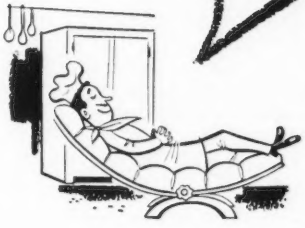

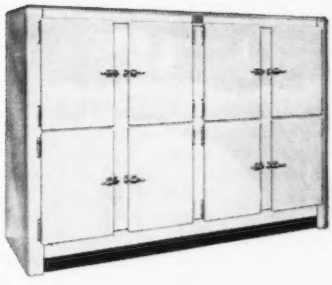

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Letters to the Editor . . .

What About the Basic 4?

TO THE EDITOR:

Even before I read the article, my first reaction to the title, "Suggested Revisions of the Basic 7" (JOURNAL, November 1955 issue, page 1103) was that I believe the Basic 7 needs revision. It has always been difficult for me to remember the seven groups, even though I was one of the people who worked on the project since its inception. The question is well put by the authors: "Although the Basic 7 plan cannot be more valid without losing its simplicity, cannot a plan be made more simple without losing its validity?"

The Basic 4 proposed by these authors seems to be a partial answer to this question. I believe the Basic 4 is much better than the grouping of two and has more real educational value. I would recommend a change from the word "basic" to some other term, thus avoiding any confusion in the lay mind with the old Basic 7. Why not a new slogan entirely, such as "Protective Four Food Groups"?

The only difficulty I can see with promoting a four-food group in place of the Basic 7 is the confusion it might create in the minds of people who have become accustomed to the Basic 7. However, educators should always be open to change, if it is an improvement. Certainly the four grouping is more natural and easier to remember, but the slogan should be changed as well as the number.

HELEN S. MITCHELL, PH.D.
Dean, School of Home Economics
University of Massachusetts
Amherst

TO THE EDITOR:

The Basic 7 guide is not a perfect teaching device, and it is questionable whether that can ever be achieved when we try to put technical data into a popular form. Failures that there may have been are not so much the fault of the Basic 7 as the way it has been used.

If a better device is available, it should be used, but to change for the sake of change would be very confusing. Many homemakers are becoming quite familiar with the Basic 7 and are trying to use it in their meal planning. To change from this device would mean discarding a wealth of helpful instructional materials prepared by many companies—also, the booklets, bulletins, and textbooks that are now available. It would also tend to destroy the confidence of the public who have begun to learn about nutrition and to have faith in nutritionists. If we say the Basic 7 is wrong and something else must now be learned, the public can justifiably ask whether we really know what we want in nutrition.

The proposed "Balanced Diet for Better Nutrition" is confusing and misleading and would require much explanatory material along with it. In this chart, the authors put fats, apparently believing they make a contribution to a balanced diet, but in the Basic 4, they omit fats. One is led to ask whether they have been able to make up their own minds as to what is needed in the diet. With that much uncertainty, perhaps we had better stay with the Basic 7.

The Basic 4 combines in one group the three groups formerly given over to fruits and vegetables. Since the authors are saying the same thing that is said in the Basic 7, but pushing all of these foods in one group, it is hard to see what is gained; on the other hand, one can see that much may be lost and less wise choices are likely to be made from this group in the Basic 4 than in the present arrangement in the Basic 7.

E. NEIGE TODHUNTER, Ph.D.
Dean, School of Home Economics
University of Alabama
Tuscaloosa

Re: Terminology

TO THE EDITOR:

I am very much interested in the letter which Jane L. Rees wrote to the JOURNAL (September issue, page 908). I have long felt that "dietitian" is an inadequate word to cover duties in the administrative field and is greatly misunderstood by the public. I would suggest limiting this title to those who deal with illness. Any change would probably take a great deal of thought, but the word "specialist" is not generally accepted in business and seems to be primarily used in connection with government work. It might be better to adapt one of the titles more generally used.

It might also be advisable to try to stimulate the publication of articles by administrative dietitians in business and commercial publications so that a more accurate appraisal of their work might be made by readers in a position to make decisions about them.

Several firms have sent representatives to Aetna to watch the dish-clearing system since the interns' article appeared in the JOURNAL (June 1955 issue, page 604).

MARY C. KELLY
Cafeteria Manager
Aetna Life Insurance Company
Hartford, Connecticut

TO THE EDITOR:

I was much interested in the discussion of nomenclature in regard to curriculum. It is also true in regard to job titles. More and more in university work, the title, "Food Service Director" is being used.

At Stanford, our dietitians are called "Dining Hall Directors." The term "Food Service Director" would be a more precise description.

CHRISTINE RICKER
Director, University Dining Halls
Stanford University
Palo Alto, California

Riboflavin and Bread Wrapping

TO THE EDITOR:

My attention has been called to the item on page 793 of the August 1955 issue of the JOURNAL, entitled "Riboflavin in Enriched Bread Saved by Opaque Waxed Paper."

Unfortunately, this report is based on data which appear to be in error. At least five other laboratories have investigated the effect of wrappers on riboflavin loss from enriched bread and have been unable to confirm the tremendous losses reported by the Snell laboratories and the differences due to the type of wrapper used.

One of these laboratories is our own. We find that, even after exposure of bread for prolonged periods under 500 foot candles of light, there is no nutritionally significant loss of riboflavin. We also find that there is no statistically significant difference in the loss of riboflavin between bread wrapped in transparent wrappers and bread wrapped in opaque waxed paper.

Little of the riboflavin in wrapped enriched bread would be subject to degradation by light because the crust of the bread furnishes protection. The crust is much more opaque than any of the common bread-wrapping materials, thus protecting the mass of the bread from light. Only a very small amount of riboflavin, which would be found on the surface of the loaf, is exposed to light and, therefore, only a very small amount can be destroyed.

WILLIAM B. BRADLEY
Scientific and Research Director
American Institute of Baking
Chicago, Illinois

Interest in Civil Defense

TO THE EDITOR:

You will be interested to know that we have received favorable comments on the report on "Arizona Is Training for Emergency Feeding" in the August 1955 issue of the JOURNAL (page 782) as well as requests for *Mass Feeding—A Manual for Homemakers* from many states, including the Extension Service, public health agencies, and hospitals.

ELSIE H. MORRIS
Extension Nutritionist
State of Arizona
Tucson

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Current Literature

Contributed by Janette C. Carlsen and Ethel M. Miller, The Johns Hopkins Hospital, Baltimore; and the Journal staff

THE AMERICAN JOURNAL OF NURSING

Vol. 55, October, 1955

*Don't read your speech! E. Reed.—p. 1212.

Don't Read Your Speech. A good speaker uses only notes and her own native ability, for many of our written words are not those which we ordinarily use in everyday speech. What's more, we often understand words on paper that we do not comprehend when we hear them. When a speaker reads a paper, especially one of some length, she may get her mouth full of "written-word mush." She also may forget to concentrate on getting her idea across because she is lulled into complacent admiration for the beauty and euphony of her own masterfully written prose, or even her own voice. A good speaker will make notes from her written material on small cards, using key words and phrases, and memorize or read only the first few lines of her speech and the last paragraph.

AMERICAN JOURNAL OF PHYSIOLOGY

Vol. 182, July, 1955

Effects of hypophysectomy and of undernutrition on amylolytic activity of the pancreas of the rat. J. L. Barrett, M. I. Nishikawara, and R. E. Huist.—p. 35.

Distribution of injected potassium salts in tissues of the potassium-deficient rat. R. Schwartz, J. Cohen, and W. M. Wallace.—p. 39.

AMERICAN JOURNAL OF PUBLIC HEALTH

Vol. 45, September, 1955

*Significance of enteric bacilli in foods. G. M. Dack.—p. 1151.

Vol. 45, October, 1955

Epidemiology of human brucellosis in Iowa. S. L. Hendricks.—p. 1282.

*Water as a sodium source and its relation to sodium restriction therapy patient response. E. J. Laubusch and C. S. McCammon.—p. 1337.

*Endemic goiter in Ohio school children. G. J. Hamwi, A. W. Van Fossen, R. W. Whetstone, and I. Williams.—p. 1344.

Enteric Bacilli in Foods. Among the changes in preservation, distribution, packaging, and processing of foods has come the development of nonsterile processed foods which are served without cooking. Examples of these foods are cereals and baby foods, dried eggs, dried fruits and vegetables, and frozen juices. These foods may become contaminated with enteric bacilli, and a public health problem then arises as to the significance of coliform bacteria in food. From 1938 to 1951 from 3 to 12 outbreaks of botulism have occurred annually, with no indications that serious hazards of this source have been traced to newer methods of food processing. Within this period food infection and food poisoning, excluding milk and milk products, have varied from 42 to 338 outbreaks annually involving about 2,000 to 12,000 cases. This number of outbreaks is not alarming in a country of 165 million people, but from the public health standpoint they are preventable. A discussion of the coliform group of organisms is given, with the caution that before interpreting the significance of such bacteria in food and establishing regulations and standards, it is necessary to weigh all the evidence.

Water and Sodium Intake. Tolerances for the mineral content of water supplies are closely related to the hypersensitivity of some individuals to specific materials. This paper deals with the problem as it related to patients for whom total sodium intake appeared to be a significant factor in the development of edema. Water can be a greater source of sodium than is generally realized. As a basic guide, surface waters obtained from lakes and rivers are generally very low in mineral content. Ground waters, particularly the deeper ones, are likely to be high in calcium, magnesium, or sodium, or all three. The latter sources probably represent the domestic water supplies for more than half the U. S. population. Conventional water treatment processes such as aeration, chemical coagulation, sedimentation, sand filtration, and disinfection have no significant effect on the sodium-ion concentration. The major exception to this is the use of cation-exchange materials for softening water. Where the excess lime soda ash form of treatment is employed for softening municipal supplies, the added sodium may be significant.

Endemic Goiter in Children. In Ohio, simple goiter is not a reportable disease; consequently, health and medical authorities concerned with the problem of iodine deficiency and simple goiter could find in 1953 no reliable figures to indicate the present size of the problem. More than 27,000 school children were examined for endemic goiter in four counties in Ohio. Of these, 4.05 per cent were found to have enlarged thyroid gland. This amounted to a reduction in goiter incidence in twenty-nine years from about one in three to about one in twenty-five. Children from homes where iodized salt was reported to be used regularly had an incidence of goiter of 3.42 per cent; those from homes reporting no use of iodized salt had an incidence of 6.06 per cent. Educational efforts are needed to promote an increased and more uniform usage of iodized salt and other sources of food iodine.

THE AMERICAN JOURNAL OF CLINICAL NUTRITION

Vol. 3, September–October, 1955

*Some relations between body weight, body fat, and calorie intake. M. I. Grossman and H. S. Sloane.—p. 403.

Endogenous calcium in the feces of adult man and the amount of calcium absorbed from food. C. L. Brine and F. A. Johnston.—p. 418.

Diet therapy: dietary procedures in the metabolic unit. L. F. Presson.—p. 423.

Body Weight, Body Fat, and Caloric Intake. Little information is available on the relation between total energy requirement and body size and body composition. The following observations were made during a study of eighty-seven soldiers. The correlation between body weight and caloric intake was low. When caloric intake was related to percentage body fat independent of body weight, an inverse relationship was revealed (caloric intake decreased as percentage body fat increased). During two one-week periods the relation between percentage body fat and percentage of calories derived from fat was examined. In one instance a significant positive correlation was found. In the other instance the correlation was not significant. The loss of body weight during a period of caloric restriction at a fixed level was found to be significantly correlated with initial body weight but not with initial body fatness. Urinary nitrogen excretion early in the period of caloric restriction was significantly positively correlated with body weight and significantly negatively correlated with percentage body fat. Later, nitrogen excretion was correlated with body weight but not with body fatness.

BOLETÍN DE LA OFICINA SANITARIA PANAMERICANA

Vol. 38, Febrero, 1955

El problema de las proteínas en la dieta mexicana. R. O. Cravioto, P. G. Massieu, and J. Guzmán G.—p. 148.

Vol. 38, Marzo, 1955

The indiscriminate feeding of anthropophilic *Simulium* upon man and domestic animals, and its relation to studies on the transmission of human onchocerciasis in Guatemala. C. L. Gibson.—p. 293.

Vol. 38, April, 1955

Nutrición y psique con referencia especial a la psicodietética experimental. J. Brozek.—p. 414.

THE BRITISH JOURNAL OF NUTRITION

Vol. 9, No. 2, 1955

*Growth and amino-acid intakes of children on a cereal-legume-vegetable diet. N. G. Baptist and B. V. De Mel.—p. 156.

*Methionine concentration in South African Bantu breast milk. M. Andersson and A. R. P. Walker.—p. 197.

Vol. 9, No. 3, 1955

*The metabolism of nitrogen, calcium and phosphorus in undernourished children. I. Adaptation to low intake of calories, protein, calcium and phosphorus. H. B. N. Murthy, S. K. Reddy, M. Swaminathan, and V. Subrahmanyan.—p. 203.

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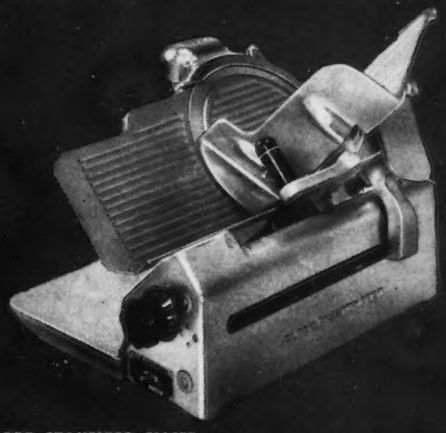

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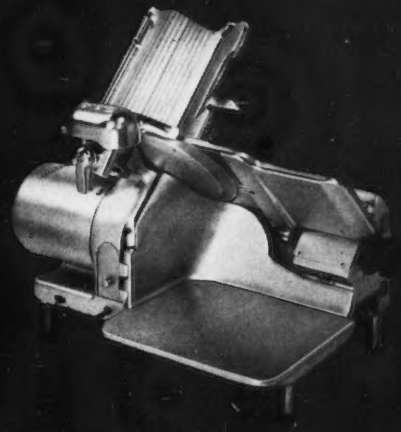

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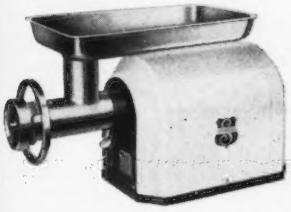

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*The metabolism of nitrogen, calcium, and phosphorus in undernourished children. 2. The effect of supplementary groundnut-milk curds on the metabolism of nitrogen, calcium and phosphorus. G. Sur, S. K. Reddy, M. Swaminathan, and V. Subrahmanyan.—p. 210.

An investigation of the daily intakes of food of individual boys at a boarding school in Uganda. R. Schwartz and R. F. A. Dean.—p. 230.

Metabolism of carotene and vitamin A given by mouth or vein in oily solution or aqueous dispersion to calves, rabbits and rats. S. K. Kon, W. A. McGillivray, and S. Y. Thompson.—p. 244.

*The energy expenditure and food intake of individual men. O. G. Edholm, J. G. Fletcher, E. M. Widdowson, and R. A. McCance.—p. 286.

*Influence of cortisone on ascorbic acid requirements of guinea-pigs; an assessment by the tooth-structure method. L. J. Harris, B. J. Constable, R. E. Hughes, and G. Loewi.—p. 310.

Children's Growth on a Vegetable Diet. The purpose of this study was to judge the adequacy of an entirely vegetable diet for children one to six years old. Thirty children from poor families in Colombo, Ceylon, participated. The diet contained a varied mixture of plant proteins from three cereals (rice, finger millet, and wheat flour); four legumes (lentil, green gram, black gram, and pigeon pea); numerous locally available vegetables; and coconut. A control group received the test diet plus skim milk. Although it is concluded that a suitable mixture of vegetable proteins can support growth in children, it is pointed out that an increase in the calcium intake of Ceylonese children on rice diets would lead to improvement in the height and physique. (The paper contains a discussion of the low-calcium intake and presents the hypothesis that calcium requirements are individually and racially adaptable to low-calcium intakes.)

Methionine in Breast Milk. Kwashiorkor affects infants and young children fed on diets habitually deficient in amino acids. The syndrome usually includes fatty infiltration, cellular necrosis, or fibrosis of the liver. Fibrosis of the liver may develop in infants at the age of six months, and possibly even earlier while they are still getting all of their food from the breast. The question has been raised whether a deficiency of methionine may be involved in the etiology of kwashiorkor. As a result, determinations of methionine in the breast milk of both Bantu and South African European mothers were made. No abnormalities were found when the methionine content of breast milk of twenty-nine Bantu women was compared with that of twenty-five local South African European mothers.

Metabolism of Undernourished Children. Few metabolic studies have been reported on undernourished children whose daily diet is deficient both in quantity and quality. This paper deals with the metabolism of nitrogen, calcium, and phosphorus in five girls, seven to nine years of age, of Mysore, India, who have subsisted for long periods on an ill-balanced and insufficient vegetarian diet based on rice. They showed a remarkable adaptation to low levels of intake and maintained, on the average, slightly positive nitrogen, calcium, and phosphorus balances. The children were stunted, and their rate of growth was very slow.

Peanut Milk Supplements and Growth. The second part of this study was carried out on another group of children to study the effect of groundnut-milk curd supplement on the metabolism of nitrogen, calcium, and phosphorus. The results showed that supplementation of a poor vegetarian diet with 12 oz. groundnut-milk curds daily increased retention of nitrogen, calcium, and phosphorus. Since milk and milk products are scarce and costly in India, the production and consumption of milk substitutes, such as fortified groundnut-milk and curds, will help make up for the deficiencies in poor Indian diets.

Energy Expenditure and Intake. The individual expenditures of energy of twelve young men were investigated daily for two weeks by direct measurement coupled with an exact diary and timing technique. The weekly balances between energy expenditure and food intake agreed when they were averaged, but there was no correlation between the mean expenditure on any one day and the intake on that day. The energy expended on one task, particularly a basal one such as sitting, lying, or standing, often varied considerably from one man to another. Energy expended at different tasks was recorded, with the hope that eventually complete tables can be compiled. A careful time and diary record will then enable the energy expenditure of a homogeneous group to be investigated with a degree of accuracy which will be sufficient for many purposes.

Cortisone and Ascorbic Acid Requirements. A possible relationship between ascorbic acid and the adrenal glands has been the subject of much experimentation. A well-known effect of ACTH is to cause a transient fall in the concentration of ascorbic acid in the adrenal glands. Some workers have claimed that ACTH or cortisone can influence the ascorbic acid requirements of animals. Since other studies had been ambiguous, it was decided to use a specific criterion, namely the effect of ascorbic acid deficiency on tooth structure. No other factor has the highly characteristic effect of ascorbic acid deficiency in causing remarkable and distinctive changes in the odontoblasts and other dental structures. Cortisone did not, in these experiments, influence the requirements for ascorbic acid.

BRITISH MEDICAL JOURNAL

No. 4939, September 3, 1955

*Duodenal ulcer treated by vagotomy and gastroenterostomy. G. F. Henson and C. G. Rob.—p. 588.

*The relationship of the ABO blood groups to duodenal and gastric ulceration. C. A. Clarke, W. K. Cowan, J. W. Edwards, A. W. Howel-Evans, R. B. McConnell, J. C. Woodrow, and P. M. Sheppard.—p. 643.

Duodenal Ulcer and Vagotomy. Out of 100 cases of vagotomy and gastroenterostomy for duodenal ulcer, there was one post-operative death. Of the remaining 99 patients, 10 defaulted and 89 were followed post-operatively. The recurrence rate of 12.4 per cent has been high, as the follow-up has been for twenty-nine months only. Eight patients have undergone further operation for peptic ulcer. There has also been high incidence of post-operative reactions. If this operation demands a highly specialized technique to be satisfactory, then it cannot be considered a successful method of therapy. Any operation for a common disorder must be successfully performed by average hands.

Blood Groups and Ulcer. The distribution of the ABO blood group in 1665 patients with ulcer from three Liverpool hospitals has been investigated. Compared with controls, there was a much higher frequency of Group O among the patients with duodenal ulceration. The blood group distribution of patients with gastric ulcer is not significantly different from that of the controls. A comparison of duodenal and gastric ulcer patients showed a significant difference in the frequency of their blood groups.

CHRONICLE OF THE WORLD HEALTH ORGANIZATION

Vol. 9, August, 1955

*Infant nutrition in the subtropics and tropics.—p. 217.

Infant Nutrition in the Sub-Tropics and Tropics. Practices in infant feeding are one of the most important factors in determining the health of the whole population. This is most apparent in the technically underdeveloped countries of the sub-tropical and tropical regions, where ignorance and superstition often vie with poverty and lack of suitable food in producing widespread malnutrition among infants and children. Any attempt to improve infant nutrition must be based on familiarity with local conditions and customs, and present-day knowledge must be adapted to the circumstances of the less-developed countries. Infant feeding practices of thirteen tropical and sub-tropical countries are tabulated, the common nutritional diseases are described.

ENDOCRINOLOGY

Vol. 57, September, 1955

*Dietary repair of defective lipogenesis and cholesterogenesis (from C^{14}-acetate) in the liver of the hypophysectomized rat. R. Hill, J. W. Bauman, and I. L. Chaikoff.—p. 316.

Lipogenesis and Cholesterogenesis. If an abundance of glucose is available to the rat, the maintenance of normal hepatic lipogenesis and cholesterogenesis is independent of anterior pituitary hormones. Note is made that careful evaluation of nutritional state of the hypophysectomized animal should be made before ascribing a metabolic effect to the removal of the anterior pituitary gland.

FOOD TECHNOLOGY

Vol. 9, October, 1955

*Studies on the preservation of bread by freezing. J. W. Pence, N. N. Standridge, T. M. Lubisich, D. K. Mecham and H. S. Olcott.—p. 495.

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*Flavomatics in food. H. L. Janovsky.—p. 500.
*Stabilized lemon powder. G. K. Notter, D. H. Taylor, and L. H. Walker.—p. 503.
*Storage behavior of powdered apple and grape juice products. V. A. Turkot, H. I. Sinnamon, R. K. Eskew, and G. W. MacP. Phillips.—p. 506.

Freezing Bread. Both physical measurements of crumb firmness and organoleptic judgments of a taste panel demonstrated the desirability of freezing bread as soon after baking as possible. The panel was quite sensitive to a relatively small difference in age of bread at time of freezing. Physical and organoleptic results both demonstrated a greater influence of speed of freezing as compared with rate of defrosting on quality of bread, when compared immediately and also up to 48 hr. after defrosting. The freezing and defrosting of bread under conditions assumed to be reasonably available for good commercial practice caused an increase in firmness approximately equal to that for unfrozen bread at room temperature during the first 24 hr. after baking; however, previous work has shown that the shelf-life of such frozen-defrosted bread was unaffected. The storage temperature affected quality of frozen bread. A temperature of 0°F. or below was required to prevent a significant increase in firmness during storage for longer than one week; 10°F. was permissible for only a few days. Bread stored four weeks at 10°F., as well as at 0°F., could not be distinguished from day-old unfrozen bread on the basis of flavor alone. Freezing did not prevent absorption of foreign odors and flavors by bread, although it is delayed by decreasing the storage temperature. Re-freezing of bread caused substantial increases in crumb firmness, but the increase became smaller each time the process was repeated.

Flavomatics in Food. It is recommended that the term, "flavomatics," be associated with the synthetic aromatic organic chemicals used in proper quantities by the flavorist in the creative formulation of imitation food flavors. Use of the word, "flavomatics," in preference to "additives," avoids reference to chemicals and creates a special classification, avoiding confusion with other chemicals never intended for, or used in, flavor preparation for the purpose of a desired taste sensation. The author disagrees with those who believe that such additives to foods are harmful. He points out that they are present in foods in only fractions of a per cent, and this should be taken into consideration in determining safety.

Stabilized Lemonade Powder. A method has been developed for making a lemonade powder containing lemon solids, lemon oil, and sucrose in the proportions ordinarily present in lemonade from fresh lemons. A 65.7° Brix concentrate can be dehydrated in a short period with a pressure of 2 mm. and final product temperature at 160°F. without undesirable effect on color or flavor of the reconstituted lemonade. The moisture level in the packaged powder can be reduced by in-package desiccation from 1.7 per cent to below 1 per cent in less than two weeks at 80°F. without affecting quality.

Storage Behavior of Apple and Grape Juice Powders. Powdered apple and grape juice products have demonstrated in extensive tests that they will store satisfactorily for at least one year at 73°F. and for at least six months at 100°F., when packed in 4-oz. cans containing a desiccant envelope. Moisture content of the powders is an important factor affecting their storage stability. For satisfactory storage at 73°F., moisture content when canned may be at least as high as 2.9 per cent for the apple and 2.5 per cent for the grape. For satisfactory storage at 100°F. without caking, moisture content when placed at 100°F. should be 2.0 per cent or less for apple and 1.7 per cent or less for grape. These lower moistures can be attained by storing the powders after canning for twelve weeks at 73°F. with an in-package desiccant. No significant differences in storage stability were found when the powders were packed in air, nitrogen, or under vacuum.

INDUSTRIAL MEDICINE AND SURGERY

Vol. 24, September, 1955
*Anthrax—agricultural and industrial—infection, treatment, and prevention. R. Vaswami.—p. 408.

Anthrax. Anthrax is a soil disease which affects both animals and human beings. In man, anthrax is hard to diagnose, and its rapidity of progress may make it impossible to diagnose before death. It respects no persons, it may result in permanent disfigurement, and its danger is continuous. Sulfa drugs and penicillin are best for treating this disease to date, but they are not always successful. Sufficient trial has not been given to chloromycetin and aureomycin to determine their effectiveness. Prompt treatment, bed rest, and immobilization of the affected part are essential. Preventive measures for controlling outbreaks and spread of anthrax include education of farmers, sheepmen, and cattle handlers of all countries; change of pasture; a check on breeding of flies and insects; inoculations of all animals in an infected area; hides and skins opened only under mechanical exhaust ventilation and all dust collected and incinerated; proper sanitary precautions where animal products are handled; adequate washing facilities and dining rooms separated from work rooms; and workers educated in use of protective clothing and personal hygiene.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

Vol. 159, September 17, 1955
*Infant feeding. Queries and Minor Notes.—p. 234.
*High blood cholesterol. Queries and Minor Notes.—p. 234.
*Iodized salt and tuberculosis. Queries and Minor Notes.—p. 234.
Vol. 159, October 1, 1955
*Energy requirements of miners. Foreign Letters. England.—p. 506.
*Nutritional guide. Foreign Letters. Peru.—p. 509.
Vol. 159, October 8, 1955
*Eating active yeast daily. Queries and Minor Notes.—p. 633.

Infant Feeding. In localities where the general milk supply is below standard, certified milk should be used if obtainable. It is the cleanest and most uniform in composition of any milk. If the general milk supply is of high quality, certified milk is not necessary. A baby can usually take with advantage more carbohydrate than the 4.5 per cent of sugar usually found in cow's milk. It usually makes little difference which sugar is used. Corn sirup, which contains dextrose, dextrins, and maltose, is the most popular. Starch, in the form of cereal, can be added at the third month.

High Blood Cholesterol. High plasma cholesterol levels can be lowered more or less effectively by a low-fat, low-cholesterol diet containing not more than 60 gm. fat per day or by the addition of plant sterols to a normal diet. The use of these procedures is still in the experimental stage as far as long term therapy in man is concerned, and use should be deferred until the evidence is confirmed in long-term trials.

Iodized Salt and Tuberculosis. The minute amount of potassium iodide that may be ingested through the use of iodized salt is of no significance in human tuberculosis. The opinion has recently been expressed, in fact, that no good evidence existed for a deleterious effect on tuberculosis even from substantial doses of iodide. The goitrogenic action of para-aminosalicylic acid cannot be reliably prevented by iodide. Desiccated thyroid, 30 to 60 mg. per day after meals, should effectively prevent the development of goiter from para-aminosalicylic acid. The iodine content for food varies greatly with its place of origin. In non-goitrous areas, common foods contain at least 10 to 100 mcg. iodine per kilogram dry weight. A normal diet, therefore, should provide as much or more iodide than that supplied by iodized salt, which contains 10 mcg. iodide per gram of salt.

Energy Requirements of Miners. A continuous record was made of the nature and duration of every activity, both at work and at home, of nineteen miners and ten clerks at Buckhaven, Scotland. Their food intake and oxygen consumption was noted. The miners expended an average of 3660 calories a day and the clerks 2800. The difference was due to the energy expended at work (1750 and 890 calories a day, respectively). The two groups used the same number of calories on their spare time activities. The proportions of calories derived from protein, fat, and carbohydrate were about the same in both groups. The miners spent 38 per cent of their working time sitting; none of the miners had energetic recreation. Taking the week as a whole both at work and at home, the miners spent two-thirds of their total time and more than one-third of their total energy lying down or sitting up.

Nutritional Guide The Nutrition Department of the Ministry of Health of Peru has prepared a nutritional guide especially for mothers of the lower classes. The feeding habits and the foods commonly used in each rural area have been considered, so that the

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THE JOURNAL OF THE CANADIAN DIETETIC ASSOCIATION

Vol. 17, September, 1955

*Nutrition and child health. J. F. McCreary.—p. 13.

*Vitamin B_6. E. W. McHenry.—p. 38.

Nutrition and Infant Health. A history of infant feeding is presented. Reasons for high rates of infant mortality are discussed. Although breast-feeding is considered the best method of infant feeding and this practice was in common use until recent years, the infant mortality rate was much higher years ago than it is now. Many other factors also influenced the mortality rate. Breast milk is still the most complete food for the first few months of an infant's life. Artificial feeding of infants continues to improve, not because of any new discoveries, but because of the more wide-spread application of those which were made many years ago. Nutritional problems in infancy and childhood today are largely correctable by education. It is not that the necessary facts are not known; they are just not known by those directly responsible for the care of babies.

Vitamin B_6. Several conclusions are drawn concerning the effects of depriving rats of vitamin B_6. A lack of vitamin B_6 reduces appetite, prevents animals from gaining weight, prevents a retention of fat, and apparently causes wastage in the production of energy. None of these effects or conclusions, however, can be attributed specifically to a lack of vitamin B_6. A deficiency of almost any other nutrient would have given strikingly similar results. A conjecture is that the chain of effects caused by a deficiency lowers the requirement for the nutrient so that the remaining body reserve can be husbanded to ward off the deficiency state. The reasons for this have been largely ignored in nutrition research and thus caused much confusion. Claims for vitamin functions have been made which were really part of a picture common to most dietary deficiencies.

JOURNAL OF CLINICAL INVESTIGATION

Vol. 34, September, 1955

*Persistence and utilization of maternal iron for blood formation during infancy. C. A. Smith, R. B. Cherry, C. J. Maletskos, J. G. Gibson, 2nd, C. C. Roby, W. L. Caton, and D. E. Reid.—p. 1391.

*Cholesterol metabolism in man. M. D. Siperstein and A. W. Murray.—p. 1449.

Maternal Iron in Blood During Infancy. Sixteen infants of mothers who had received transfusions of red blood cells containing Fe^{55} were studied for periods up to thirty-two months of age. Measurements of RBC, hemoglobin, hematocrit, total iron, and Fe^{55} of erythrocytes were made from umbilical cord blood and from venous blood obtained at intervals during the study period. Results indicated very little or no utilization of dietary iron from hemoglobin until three to four months after birth. At one year, iron of transplacental origin constituted 70 per cent of the total hemoglobin iron; at two years, 40 per cent. In absolute terms these values correspond to 170 mg. transplacental iron at birth, 200 mg. at one year, and 160 mg. at two years in the total circulating hemoglobin. At two years, over 90 per cent of transplacental iron was still utilized for hemoglobin. A 20 per cent rise in transplacental iron at 200 or 500 days over that present in hemoglobin at birth suggested utilization of iron stored elsewhere during fetal life. Infants with relatively low total circulating hemoglobin at birth tended to show relatively large amounts of such stored iron in later hemoglobin manufacture. Individual infants deviated from the pattern described for the group. In particular, a premature infant of thirty-six weeks' gestation had low total circulating hemoglobin at birth, no evidence of any stored iron in later hemoglobin formation, and proportionately high utilization of dietary iron which first appeared in hemoglobin at sixty-five days after birth. It is concluded that the hemoglobin of normal infants utilizes iron obtained during fetal life throughout infancy, incorporates significant amounts of dietary iron only after three or four months of age, and by two years reaches a total of 115 gm., composed of 70 gm. from dietary and 45 gm. from transplacental iron. Prematurity increases the proportionate contribution of dietary iron.

Cholesterol Metabolism in Man. Cholesterol was injected intravenously into a man with complete biliary drainage. The routes of excretion and the major compounds to which cholesterol is converted were then studied. Of the administered cholesterol, 39.6 per cent was eliminated by all routes of excretion in a 50-hr. period. Over 98 per cent of the excreted cholesterol appeared in the bile, 1.3 per cent in the acholic feces, and 0.2 per cent in the urine. None was found in the expired air. It has been shown that in man, the major pathway of cholesterol metabolism involves the conversion of cholesterol to bile acids. The chief excretory product of cholesterol in the bile of man has been identified as glycocholic acid.

JOURNAL OF HOME ECONOMICS

Vol. 47, October, 1955

*Hunger is the enemy. E. J. R. Heyward.—p. 599.

Home freezing of prepared and precooked foods. B. Meyer.—p. 603.

Hand versus machine dishwashing in the home. W. L. Mallmann.—p. 609.

UNICEF's World-Wide Program. In ten years, the Children's Fund of the United Nations (UNICEF) has aided over 100 million mothers and children in more than a hundred countries and territories by helping to fight mass disease. Malnutrition remains the greatest single factor affecting the lives of half the world's children. Continuing the program of relief feeding started by UNRRA in Europe, with particular emphasis on milk distribution, the Fund has provided equipment for milk drying and pasteurizing plants. Local governments supply buildings, locally available equipment, and labor. Eighty such milk drying plants and twelve pasteurizing plants are now in operation. Since 1950, however, the main emphasis of UNICEF work in nutrition, as well as in other fields, has shifted from Europe to the economically underdeveloped areas of the world. Already it has approved aid for sixteen milk drying plants in Africa, Asia, the Eastern Mediterranean, and Central and South America, and thirteen fluid milk plants in each of these areas except Africa. In Iraq, for example, where infant mortality is 300 per 1000 live births in rural areas, the government is now building and UNICEF is equipping a modern dairy in Bagdad where 20,000 liters of milk per day will be sterilized and bottled. Because a modern dairy is useless without fresh milk, free advice on feeding, breeding, and husbandry is provided to cattle owners in return for the maintenance of minimum hygiene standards. Dried milk is supplied until pure milk is available. In 1955, UNICEF will reach 2,700,000 children in more than fifty countries in this way. UN nutritional experts in research centers on every continent are also working to overcome nutritional ignorance by developing locally available protein foods which are now largely neglected. Fish meal and the residuals of oil extracting processes, such as press cakes of soya bean, peanut, cottonseed, sesame seeds, and sunflower seeds, are very high in protein content but rarely used for human consumption. In Indonesia a plant is being constructed with UNICEF aid to produce a "milk" made from the soya bean. Fish flour is another product which holds promise for better child nutrition when added to soups, gruels, or baked in bread.

JOURNAL OF THE INDIAN MEDICAL ASSOCIATION

Vol. 25, July, 1955

*Observations on complications and treatment of enteric group of fevers. J. K. Thanawala.—p. 125.

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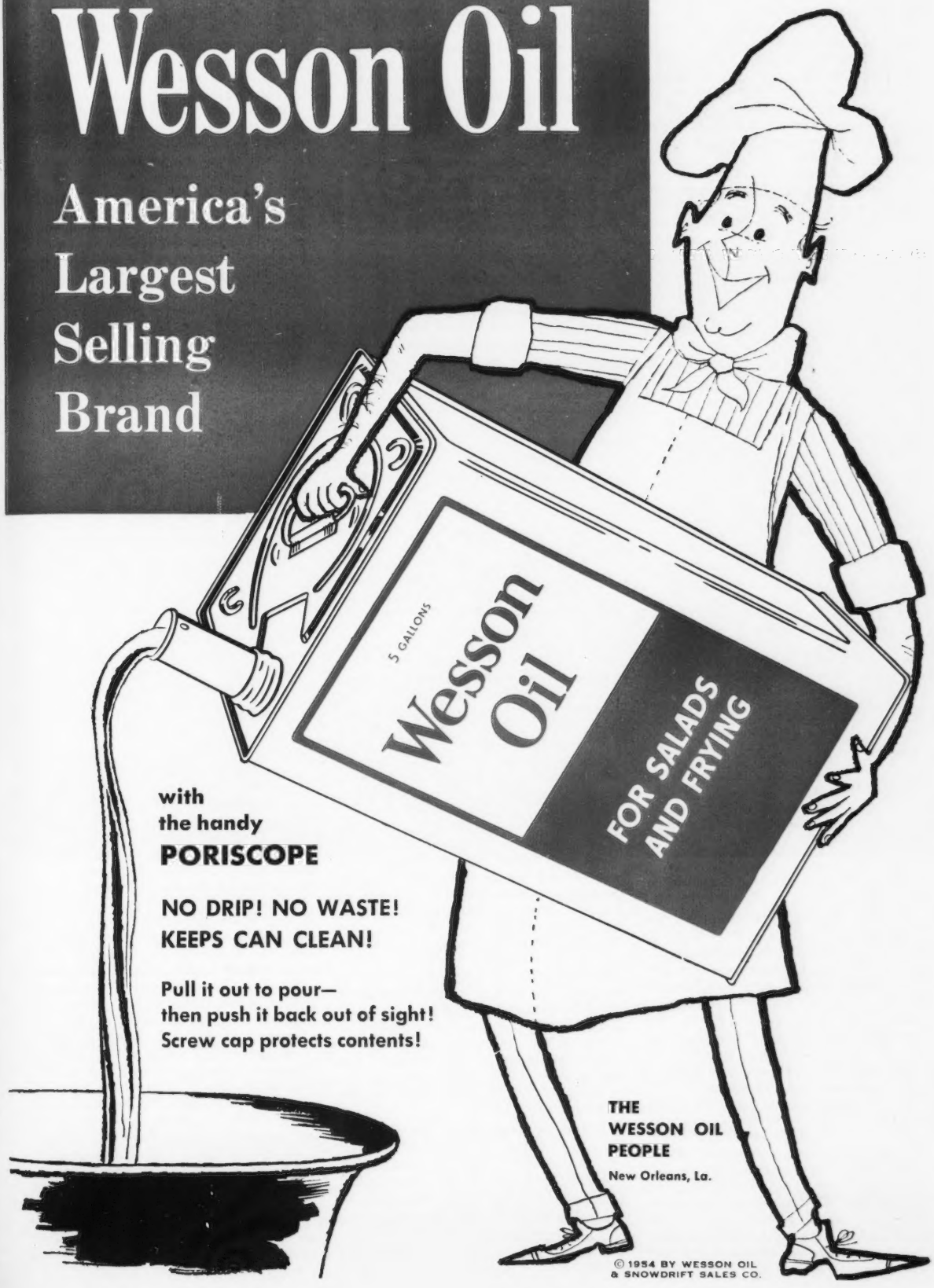

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Enteric Fever. Enteric fever is endemic in the city of Bombay. Although it has not been declared as an epidemic disease, the number of admissions at city Fever Hospital have totaled over 3000 in one year. Particular attention is given in the article to diet for these cases. As far as possible, a diet rich in calories should be given. In the Hospital, an enteric fever patient at first receives about 2300 calories. This is served in the form of milk, barley, and glucose drinks, pudding, soft rice, and mashed potatoes (71.4 gm. protein, 198.7 gm. carbohydrate, and 104 gm. fat). The patient is kept on this regimen until his temperature returns to normal, and for seven days thereafter. A diet of approximately 2027 calories follows, made up of milk, rice, butter, bread, and dal (69 gm. protein, 232.3 gm. carbohydrate, and 90 gm. fat). Patients with complications of diarrhea or meteorism receive apple pulp, banana pulp, barley water, and albumin water. When the condition is checked, a milk diet is given for four days, followed by a high caloric diet. Patients suffering from hemorrhage or perforation are completely starved. On the third day after the hemorrhage is checked, they receive 1 oz. apple pulp every 4 hr. Subsequent treatment is the same as for patients with the complication of diarrhea.

THE JOURNAL OF NUTRITION

Vol. 56, August 10, 1955

*The enhancement of the toxicity of sodium fluoride in the rat by high dietary fat. R. F. Miller and P. H. Phillips.—p. 447.

*Nitrogen metabolism and fat absorption in malnutrition and in kwashiorkor. K. Holemans and A. Lambrechts.—p. 477.

*Nicotinic acid metabolism in humans. I. The urinary excretion of nicotinic acid and its metabolic derivatives on four levels of dietary intake. E. I. Frazier, M. E. Prather, and E. Hoene. —p. 501.

*Nitrogen utilization during caloric restriction. I. The effect of dietary fat content. D. H. Calloway and H. Spector.—p. 533.

*Nitrogen utilization during caloric restriction. II. The effect of variation in nitrogen intake. D. H. Calloway and H. Spector.—p. 545.

*Lysine and methionine supplementation of all-vegetable diets for human adults. D. M. Hegsted, M. F. Trulson, H. S. White, P. H. White, E. Vinas, E. Alvistur, C. Diaz, J. Vasquez, A. Loo, A. Roca, and C. Collazos Ch. —p. 555.

Dietary Fat and Fluorosis. Increasing the dietary fat from 5 to 15 per cent in a purified ration increased the growth-retarding effect on rats of a diet which contained 0.1 per cent sodium fluoride. Also, the protein-energy relationship was not responsible for the retarding effect of high-fat on rats fed sodium fluoride. Dietary supplements of pantothenate, methionine, or ascorbic acid, alone or in combination, did not alter the growth-retarding effect of added dietary fat. Neither did the subcutaneous or intraperitoneal injection of ATP, pantothenate, or cysteine, either singly or in combination, prevent the enhancing effects of added fat on the development of fluorosis in the rat. Fifteen per cent of butter fat as well as 15 per cent of cottonseed oil were equally effective in enhancing the toxic action of 0.1 per cent of sodium fluoride in the ration. In these experiments the feeding of increased levels of fat and diets containing 0.1 per cent sodium fluoride caused an increased deposition of fluorine in the femurs.

Nitrogen and Fat in Malnutrition. Forty-four nitrogen and fat balance experiments have been performed with African children living for a long time on protein-deficient diets and suffering from severe malnutrition or kwashiorkor. As a rule, positive nitrogen balances were obtained, showing a retention proportional to the intake (about 50 per cent). Nitrogen was best retained on about 450 mg. per kilogram body weight per day. Even under the experimental conditions, the minimum requirements seem to be maintained at the normal level of about 150 mg. per kilogram per day. The total fecal nitrogen averaged 21 per cent of intake, indicating nitrogen absorption of 79 per cent, a lower value than normal. The metabolic nitrogen, however, gave a normal value of 30 mg. per kilogram body weight per day. The nitrogen retention was as good for vegetable proteins as for animal. The fat absorption (80 per cent) was lower than that in normal children (95 per cent). Reasons are given for thinking that only digestion is impaired and that intestinal absorption is normal.

Niacin Metabolism in Humans. The niacin metabolism of six freshman and sophomore college women on four levels of dietary intake of niacin and tryptophan was studied. On a control diet providing 11.3 mg. niacin and 88 mg. tryptophan, the average amount excreted by the six subjects in the form of the vitamin and its two major metabolites, balanced the intake. When the niacin of the control diet was increased to 14.3 mg. with a concomitant increase in tryptophan, there was a slight increase (1.0 mg.) in the total amount of the vitamin and its metabolic derivatives found in the urine. Following twenty-eight-day control periods of study, a basal diet containing 7.2 mg. niacin and 600 mg. tryptophan was fed for eleven days. The average decrease in total excretion during this regimen as compared with the control level of excretion was 3.04 mg. On the basal diet the total average excretion (expressed as niacin) was 128 per cent of ingestion. During the post-basal period with an increase to 16.3 mg. intake, the excretion of niacin and N^1-Me returned to control levels, while the amount of pyridone exceeded the pre-basal level. With each increment in dietary niacin, approximately one-third of the increase was excreted as pyridone; on the other hand, a comparable decrease in niacin intake was reflected in decreased excretion of the vitamin and N^1-Me as well as the pyridone.

Nitrogen Utilization and Dietary Fat. In military operations individuals are sometimes cut off from food supply channels and must exist on limited amounts of food and water. When protein is catabolized for energy, the nitrogenous end products require additional urinary water for excretion. The extent of protein utilization at low caloric levels must be known to prevent dehydration when the intake of water is also limited. These studies were made to provide guidance for the design of a suitable survival food packet for use by the Armed Forces. Well-nourished mature rats were fed for four days on diets composed of egg albumin or milk proteins containing either 30 or 5 per cent fat at three levels of caloric intake: 100, 50, or 25 per cent of the determined requirement. Body weight loss was inversely proportional to the level of caloric intake and was unaffected by the composition of the diets. All calorie-restricted groups were in negative nitrogen balance, the degree being directly related to the caloric intake. The same qualitative changes in composition were found in both liver and carcass, but the changes were magnified in the liver. Losses of nitrogen were least in groups fed a full diet, were greater but approximately equal in groups receiving 50 and 25 per cent of the caloric requirement, and greatest in the fasted group. The level of fat was directly proportional to the caloric intake.

Nitrogen Utilization in Caloric Restriction. It has been shown that nitrogen utilization is a function of both caloric and protein intake. In these experiments the relationship between nitrogen intake and utilization was examined in normal adult rats restricted to half the caloric requirement. The degree of negative nitrogen balance was inversely proportional to nitrogen intake, but positive balance was not attained. Nitrogen utilization diminished as the level of dietary nitrogen increased from 52 to 61 per cent at 70 to 80 mg. egg albumin nitrogen daily, to 17 per cent at 604 mg., indicating increased use of dietary protein for energy. Feeding half the caloric requirement reduced body losses by 32 to 39 per cent as compared with fasted animals. With the addition of dietary nitrogen, the net protein saving was 87 per cent above that due to calories alone.

Amino Acids in Vegetable Diets. Nitrogen intake and excretion data for young adult subjects consuming all-vegetable diets with and without supplements of lysine and methionine are presented. The essential amino acids of the diet were determined. An all-vegetable diet supplying 25 gm. protein per day, of which 48 per cent of the protein came from wheat products and 62 per cent from other cereals, contained all of the essential amino acids in quantities equaling or exceeding Rose's estimated minimum requirements. The amount of methionine plus cystine barely equaled the estimated requirement. Supplementation with lysine improved nitrogen retention following a depletion period, and methionine plus lysine supplements appeared to improve the retention still more. These data are interpreted as demonstrating improvements in biologic value of the dietary protein. Considering the relative ease with which the subjects approach nitrogen equilibrium on the unsupplemented diet, the likelihood of protein or amino acid deficiencies in an adult population consuming diets essentially of vegetable origin appears

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to be small. The data emphasize the probability that the proteins of fruits and vegetables which are usually not considered to be of importance in protein nutrition may be an important supplement to the cereal proteins.

THE LANCET

No. 6890, September 17, 1955
*Trichinosis in Greenland. J. P. Masterton and H. E. Lewis.—p. 591.

Trichinosis in Greenland. In nine dogs examined, seven were found to have trichinosis. This is probably caused by the practice of feeding dogs raw meat of polar bears, walrus, and seal, as well as the carcasses of older dogs which have been shot. No trichinosis was found in six foxes examined, but the small number examined do not justify any conclusions.

NEW ENGLAND JOURNAL OF MEDICINE

Vol. 253, September 15, 1955
*Diabetes mellitus and liver function. R. F. Bradley, O. Segild, and F. E. Schertenleib.—p. 454.
Vol. 253, September 22, 1955
*Oral treatment of pernicious anemia with vitamin B_{12} without intrinsic factor. E. H. Reisner, Jr., J. L. Weiner, M. T. Schittone, and E. A. Henck —p. 502.

Diabetes and Liver Function. Of 118 diabetic individuals studied for liver function, only 16 (14.4 per cent) gave abnormal findings on the basis of one or more tests, and only six or 5.4 per cent had two or more abnormal tests. Such a low prevalence of abnormal liver function indicates that significant liver disease occurs rarely as a result of diabetes mellitus.

Pernicious Anemia and Oral Vitamin B_{12}. In forty-three patients with pernicious anemia, 1 mg. vitamin B_{12} given orally at intervals of one or two weeks provided satisfactory maintenance therapy for twelve to twenty-eight months. From studies of relapses on different dosage schedules, it appears that, with possible individual exceptions, weekly therapy of this type would be satisfactory for all patients with pernicious anemia.

NUTRITION

Vol. 9, Autumn, 1955
*Lessons learnt from the National Food Survey. D. F. Hollingsworth.—p. 104.
The problem of obesity. J. B. Oldham.—p. 108.

Britain's National Food Survey. During the fourteen years of food rationing in England, it was possible to base the teaching of nutrition on the need to eat the rations to which the individual was entitled, to take adequate quantities of vegetables, and to fill up on potatoes and bread. Now that people may choose their foods without restriction, the nutrition education program takes on new emphasis. An aid to teaching can be found in the results of the National Food Survey, which has been in operation since 1940 and is a continuous inquiry into household food expenditure and consumption. Made by the Ministry of Food, it uses records supplied voluntarily by selected samples of homemakers. These records are described. Using the resulting data, nutrition can be taught on a realistic basis at an elementary level. Three methods can be used: a method based on the function of food (an example is the British three-food-group method); a method based on recommendations as to the desirable amounts of certain foods for inclusion in the diet each day (as the Canadian five-food rules); and a method based on instruction in the way to apportion the money to be spent on food (the division of the food budget into fifths).

NUTRITION ABSTRACTS AND REVIEWS

Vol. 25, July, 1955
*The physiological basis of obesity and leanness. J. Mayer.—p. 597.

Physiologic Basis of Obesity. In the past thirty years, literature on the regulation of food intake has emphasized the psychologic side. Recent studies have demonstrated the failure of this approach. For this reason, this review is an attempt to sum up the present knowledge of the physiologic aspects of the etiology of obesity. The question is asked: 'What are the mechanisms in terms of structure and function that regulate caloric intake and weight? At a given moment, feeding behavior is conditioned by a number of environmental, physiologic, and psychologic forces which can be classed as metabolic and regulatory. The metabolic factors depend on the general metabolism of the individual and appear to depend on the rate at which the body can dispose of certain products and consequences of eating (heat according to one theory, glucose according to another, and perhaps waste products of protein metabolism). Long-term factors are also involved, particularly the state of the fat depots. Types of obesity are reviewed as are the causes of excessive thinness. A lengthy bibliography completes the article.

NUTRITION REVIEWS

Vol. 13, August, 1955
*Plasma iron: its transport and significance. A. L. Schade.—p. 225.
*Alcohol, nutrition and liver blood flow in man.—p. 229.
*Niacin and amino acid imbalance.—p. 239.
Vol. 13, September, 1955
*Phytic acid and its importance in human nutrition. R. S. Harris.—p. 257.
Reducing diets.—p. 259.
*Dietary fat and life span.—p. 278.
*Body composition in obesity.—p. 285.

Plasma Iron. Iron essential to man is derived from his diet and made available by an iron-specific transport mechanism in the blood plasma which carries the iron absorbed from the gastrointestinal tract to the appropriate cells and tissues. The magnitude of the physiologically conditioned movement of plasma iron can be appreciated from the fact that 25 to 30 mg. iron are turned over every 24 hr. Of this turnover iron, 75 per cent is accounted for by the daily requirements of hemoglobin synthesis alone and is provided by the iron freed in daily hemoglobin breakdown. The protein component of plasma which functions as the iron carrier in the plasma iron transport system is siderophilin. The characteristics of this protein component are described, as are the circumstances which led to its identification, culminating twenty years of investigation by many workers. As a result, there is a resurgence of interest in the significance of siderophilin in health and disease. Siderophilin has a claim to further investigation in metabolic studies of vitamin and amino acid nitrogen requirements and as an important agent in host resistance to microbial infection.

Alcohol, Nutrition, and Liver Blood Flow. Cirrhosis of the liver is known to follow prolonged consumption of an inadequate diet. There is also the possibility that chronic infections, malaria, and alcoholism may either condition the nutritional deficiency or directly damage the liver. One of the most prominent and earliest lesions found in the liver is fatty infiltration which, it has been suggested, may interfere with hepatic blood flow and diminish nutrient supply, resulting in loss of hepatic substance in this area with subsequent fibrosis. Two studies of hepatic blood flow in man are cited. They indicate that alcohol increases the hepatic blood flow. Alcoholics who had consumed a poor diet and had fatty infiltration of the liver did not show a significant decrease in hepatic blood flow but did have a lowered hepatic venous oxygen saturation, which presumably comprised the nutrition of the centrolobular liver cells.

Niacin and Amino Acid Imbalance. Deleterious effect of amino acid imbalance produced by the addition of certain amino acids or proteins to diets of limited protein or niacin content has been observed. Theories for the cause of growth suppression are given and questioned. The studies are of value because they emphasize the complexities of the growth process and the interrelations among nutrients; however, they should be considered as hypotheses only. They are worth while as long as they are recognized as hypotheses and do not become accepted as adequate explanations. More investigations along this line are needed.

Phytic Acid in Human Nutrition. It seems clear that phytic acid is present in many of our foods and that it may interfere with mineral nutrition. The phytate problem may be serious in areas of the world where the people consume large amounts of unrefined cereals and small amounts of calcium. It is not an important problem in the United States where the people usually consume refined cereals and generous amounts of calcium-rich foods.

Dietary Fat and Life Span. The data indicate that short-term feeding (five months) of a diet moderately high in fat can somewhat prolong the life of an animal, providing the diet is fed early in life. On the other hand, long-term feeding of such a diet can reduce the animal's life span. The mechanisms

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underlying this duality of action are unknown.

Body Composition in Obesity. Several studies are described which provide objective evidence for the fact that the major body component which increases in obesity is fat. It would further seem to indicate that an organism produces only a definite amount of protein. The amount of protein produced in the adult animal is not changed, regardless of marked increases in body weight.

SCIENCE

Vol. 122, September 23, 1955

*Lysine and cariogenicity of two experimental rat diets. F. J. McClure and J. E. Folk.—p. 557.
*Prenatal ingestion of fluorides and their transfer to the fetus. R. Feltman and G. Kosel.—p. 560.

Lysine and Caries. In one of the studies discussed, a supplement of 2.5 per cent DL-lysine accounted for a significant reduction in both incidence and severity of dental caries. Interest was then centered on a diet containing skim milk powder which was lysine-deficient. A notable reduction in caries occurred on the addition of L-lysine to this diet. On the average, L-lysine reduced caries approximately 59 per cent in incidence, 78 per cent in number of carious teeth, and 83 per cent in severity score. Arginine and histidine were inactive when added to this diet. D-lysine, ornithine, and cadaverine failed to reduce the caries produced by the diet.

Transfer of Fluorides to the Fetus. The results of this study indicate that the fetal blood level of fluorides can be increased by supplementation of the mother's diet either in tablets or in water; however, the importance of this is difficult to assess at present because there is no known normal or optimal concentration. Although an increased fluoride concentration in both the cord blood and the placental tissue of the study cases was found, no other correlation was demonstrated. The role of the placenta in fluoride metabolism remains obscure. It may serve as both a storehouse and a regulator of the fluorides. In an attempt to prevent too much fluoride from entering the fetal blood stream at one time, the placenta pushes it away from the area of most active maternal-fetal exchange. In the periphery, fluorides are stored and released as needed.

AMERICAN RESTAURANT MAGAZINE

Vol. 39, October, 1955

*Simplified sanitation assures self service success.—p. 56.
*Clean work habits make a clean restaurant.—p. 58.
*Flying saucers cost you big money.—p. 66.
*Cleanliness breeds cleanliness.—p. 88.
*Clean appeal in fresh uniforms.—p. 122.
Five steps to clean floors.—p. 124.

Simplified Sanitation. By making each department of a food service operation responsible for the cleanliness of its area and providing it with complete equipment for the maintenance of maximum sanitation, a large cafeteria in Texas is achieving the highest level of sanitation. All equipment is built into the wall or is located in open areas for maximum ease in cleaning. Work areas are designed with floors sloped to built-in drains. Running hot and cold water hydrants are located in each department. A supply of snow-white mop heads is issued each day. To show how well this system works, only three janitors are required to maintain an area of over 38,000 sq. ft.

Clean Work Habits. It is not enough that a restaurant and its employees look clean; of equal importance is the way they function. The suggestions in this article serve as a guide toward achieving better sanitation.

Broken Dishes Cost Big Money. Average dish breakage or replacement costs are 1 per cent of food sales. Cutting down on dish handling is the most direct approach to the problem of reducing this expense. In small operations, breakage can be reduced by installation of a dishwashing machine. In larger establishments where dishwashing machines are already used, the addition of auxiliary racks, carts, and tables can contribute to breakage control. An illustrated layout, showing proper planning to cut dish loss, and nineteen helpful suggestions on breakage control, are included.

Cleanliness Cuts Your Cost! Clean, attractive restrooms discourage customer abuse. A regular program of inspection and maintenance of the washrooms, and proper instruction for cleaning personnel are necessary. Employees should be taught to use nothing stronger than soap and water in cleaning fixtures, for scratches due to improper cleaning are a frequent cause of damage to plumbing fixtures. Installation of fixtures plays an important part in cleaning; restrooms equipped with wall-hung fixtures require less cleaning time than those with floor-mounted fixtures. It pays to invest in high-quality fixtures, and acid-resistant fixtures, preferably colored, should be used exclusively in public restrooms.

COLLEGE AND UNIVERSITY BUSINESS

Vol. 19, October, 1955

Food preferences of college women. M. W. Lamb, V. J. Adams, and J. Godfrey.—p. 50.

HOSPITAL MANAGEMENT

Vol. 80, September, 1955

*Keeping diabetic patients in line. P. A. Capitanelli and A. B. Beach.—p. 93.

Diabetic Patients. A weight-reducing "club" among obese, diabetic patients of the Diabetic Clinic, Presbyterian Hospital, Chicago, has helped to create a greater interest in weight reduction. The purpose of this program is to create a greater desire on the part of patients to lose weight. This is done by assisting them to understand more clearly why they should lose weight and how to do it, as well as developing a competitive interest among a group. Patients learn through friendly group work why they fail to follow advice that would surely improve their health. They also observe the effects of weight reduction on the diabetic situation. Often it is found from the discussion that food eaten is not the reason for failure to lose weight but rather method of preparation. Then different methods of safely preparing foods are discussed. Patients are encouraged to bring recipes to the meetings to share with others. The emotional factors of over-eating are also stressed. Thus this reducing "club" serves as a clearing house for patients' lack of understanding of their diets and their misconceptions about foods and also teaches the advantages of reducing. Menus suggesting combinations of foods that would attract the diabetic patient are included in this article.

HOSPITALS

Vol. 29, September, 1955

*Staff development is hard work. D. Johnson.—p. 130.
*Talking about principles is not enough! W. P. deMille.—p. 132.

Vol. 29, October, 1955

*A practical approach to work simplification.
1. The principles and tools. E. R. Mattos.—p. 126.
2. Their application in the dietary department.—p. 127.

Staff Development. The importance of adequate supervision in a dietary department cannot be overemphasized. It starts when the director of the department sets objectives for her staff and department. Staff meetings are an essential method of communication in teaching staff members. Delegation of authority is essential. Directors must have faith and confidence in staff members to carry out their assignment.

Development of Supervisors. The most effective supervision is "supportive," rather than authoritarian. It is directed more at the individual's fulfillment and achievement than at impersonal goals of production or economy. Authority is that which the employee grants to his "boss" rather than that which organizational status or decree confers on the person in charge. The following leadership principles must be in effect: (a) Workers must be given a chance to share in finding and testing solutions to problems. (b) Individuals must be told how their work measures up to standards. (c) Directors should be accessible to workers for discussions of their personal and job problems. (d) Supervisors must listen attentively and responsively when their people come to them with problems and suggestions. The supervisor should review his relations with his superior, especially as to how that relationship may be affecting his conduct toward those whom he supervises. The supervisor may obtain facts about people's attitudes toward him and the institution by means of attitude questionnaires or surveys. The supervisor should have a regular and planned program of individual progress and merit interviews with each person in his department. Group discussions should be a normal and regular, but not necessarily scheduled, part of the program.

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Put these films to work for you. Both are full color, sound motion pictures. Informative and strictly non-commercial, they consolidate into 42 interesting minutes the findings of a three-year research project devoted to the study of the most common trouble areas of dishroom operation.

FLYING SAUCERS—30 minutes, sound in full color—deals with management considerations.
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Work Simplification—Principles and Tools. Work simplification has a two-fold objective: to develop an attitude of inquiry and to help people see their jobs in terms of motion. The tools and techniques of work simplification help to achieve this objective. At Massachusetts General Hospital in Boston, a work simplification program was first presented to top management, department heads, and assistants. An in-service training program was then introduced. An organized approach to development and installation of a new method was used in the following five-step pattern of work simplification: picking a job to improve; making a flow-process chart (or using some other tool); challenging every detail; developing the new method; and applying it on a trial basis. As part of the training program, a project-experiment was undertaken by two-member teams who picked a job to analyze using the five-step principles.

Work Simplification—Application in the Dietary Department. The dietary department at Massachusetts General Hospital decided to employ every available tool to streamline its operation and cut food costs. It was found that a six-week menu plan of entrées saved valuable hours, eliminated repetition, and distributed costs more evenly. It was decided to reduce the number of participants buying meat, and purchasing is now done by the dietary department alone. In the kitchen, chefs and cooks turned their attention to portion control. In the salad room, it was found that slicing tomatoes by machine would realize a 75 per cent saving, or $1,000 yearly. Other improved procedures included added shelves in the refrigerator and a new cart which transports 225 trays, reducing the number of trips from dishroom to cafeteria. The location of a safe was changed to save cashiers' steps. A saving of $40,000 was made in the first two years of the program without lowering food service standards.

THE HOTEL MONTHLY

Vol. 63, October, 1955

*"Just like having extra help in the bakeshop." V. Siebert.—p. 50.

Cake Mix as Basis for Desserts. An angel food cake mix solves a dessert problem for a busy catering manager. Using the basic cake, he slices it and adds four ingredients—ice cream, whipped cream, fruits, and sauces, making dessert combinations for every phase of a food selling program. Because the ingredients are highly perishable, a miniature production line is used to keep the time lag between preparation and service at the minimum. Many attractive combinations with maximum eye and appetite appeal are pictured.

INSTITUTIONAL FEEDING AND HOUSING

Vol. 5, October, 1955

*On-the-job training. R. S. Foster.—p. 22.

*Care of dacron uniforms.—p. 24.

*How to care for cutlery.—p. 28.

*Waste control. C. Draper.—p. 62.

Trained Help Is Good Help. A restaurant owner-manager in Massachusetts finds on-the-job training one of the best methods for teaching food service personnel and kitchen employees. Trainee waitresses begin work as "water girls," advancing to apprentice and probationary stations as they are trained. Experienced waitresses who join the staff also go through this procedure, although for a shorter time. A similar system is used with the kitchen employees. At staff meetings, the employees have an opportunity to make suggestions. The supervisory staff also meets with top management to plan and evaluate. An annual meeting is held when supervisors and management look back over the past year to benefit from any error made. Supervisors are also sent each year to a university seminar to learn new methods and ideas.

Dacron Uniform Care. Careful laundering makes synthetic fibers last longer. The garment should be washed thoroughly in warm water with a heavy-duty soap or detergent and a water softener, with pre-washing at soiled points desirable. Never mix white Dacron with colored garments or twist or wring during washing or rinsing. Use of an anti-static agent at the final rinse stage will reduce clinging or lint pick-up. Dacron should not be allowed to go through the spin-dry cycle in an automatic machine. The garment should be allowed to drip dry on a non-staining hanger. It may be damp-dried in a home dryer and then hung on a hanger to complete the drying process, however. While still damp, shape collar, cuffs, and seams. Ironing, when necessary, should be done with a warm iron. Mend or darn before the material is washed.

Cutlery Care Cuts Time. The proper use of cutlery equipment pays off in decreased labor needs. The first step to get the most out of cutlery is to be sure that knives are kept in the right places for they become dull and are nicked quickly when thrown helter skelter into a drawer. Blades should be kept clean and sharp. If a blade no longer responds to honing or a sharpening steel, an oil stone may sharpen the blade. In areas where professional sharpening services are available, sending cutlery out to be sharpened will prove economical. For professional use, the two blade styles generally used are the simple V grind and the Cannell or rolled edge. Stainless steel blades offer durability, toughness, and will not rust or stain. Periodical inspections should be made of cutlery and a sufficient supply kept on hand.

Time-and-Motion Analysis Controls Labor Costs. Wasted labor can be pinpointed and eliminated by coordinating production, job function, and layout. Wasted labor can be determined by an analysis of each working area or by grouping and analyzing labor according to job function. As a guide, an outline of each procedure is included in this article and diagrams to show layout of equipment and work flow. Three areas of food preparation are described in detail as well.

INSTITUTIONS

Vol. 37, October, 1955

*Tips on management IQ. Compensation for supervisors? T. Elliott.—p. 24.

*Control of costs takes more than accounting. P. Dukas.—p. 50.

*Statistics aid modernization planning. L. W. Scott.—p. 64.

Determining food service efficiency. S. M. Hartt.—p. 126.

Compensation for Supervisors. The working leader who carries a full work load but who also serves as a "pacesetter" and is frequently called on to help in training new employees should be paid approximately 10 per cent more than the highest paid worker in his group. A part-time supervisor who works about 50 per cent of the time and spends the rest of his time in laying out and checking the work of subordinates should be paid about 25 per cent more than the highest paid employee under his supervision (not 25 per cent more than working leaders, but regular working employees). A full-time supervisor should be paid 40 per cent more than the highest paid regular worker under his supervision. The general supervisor responsible for planning, organizing, and evaluating all activities, should receive about 55 per cent more than the highest paid workman under him.

Control of Cost. The author traces the development of modern food cost control methods. Included are summaries of one system which controls food costs after they have been incurred, and a second system which attempts to control costs in advance.

Statistics in Modernization Planning. In modernizing the kitchen, four factors are of prime importance: materials flow, traffic flow, safety, and sanitation. You must have an efficient general layout which allows for maximum productivity of each employee. In determining these space requirements or in re-allocating kitchen and dining room space, certain statistics can be used as a guide. For example, there is always the temptation to increase the seating capacity by cutting down on the kitchen area. Actually, it is the efficiency of the kitchen and not the dining room capacity which really determines how many people you can feed during a meal. Thirty-five per cent of the total area is a reasonable kitchen space for most restaurant operations. This figure can, of course, be modified to fit a given operation; the type of menu and the presence or absence of a bake shop also greatly influence the final decision. There are also relationships that can be established between the income and the number of seats or square feet of building space. Every year public accounting firms determine the average investment per seat for each type of operation, the average annual sales per seat, and the average square footage needed for each type of seat. A good real estate advisor can counsel you on the sales volume needed per square foot of area occupied to justify your rental. There is also a method of determining how many square feet would be needed in a given operation to gain a desired sales potential. This method takes into consideration such

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Exquisite coffee

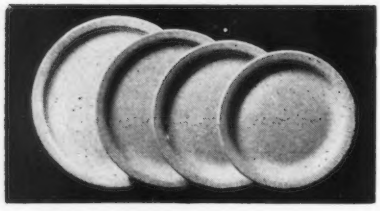
In many a famed hostelry, where guests expect the best as a matter of course, Sherman Blend exquisite coffee is served as a matter of sound economics. It embodies all we have learned in nearly three-fourths of a century in roasting and blending coffee to please the public taste. Yet so little more does it cost per cup, with a full forty cups to every pound, that it is a genuine economy to serve it and insure utmost guest pleasure.

JOHN SEXTON & CO., CHICAGO. 1955

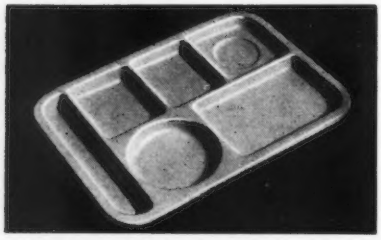
cut breakage costs to an all-time low!

More than 1000 schools and hospitals all over the country are getting better service at greater savings with this line. How about you?

ARROWHEAD
Heavy duty dinnerware of non-chipping Melamine plastic in beautiful pastel colors. Wide rim design.



EFFICIENCY WARE
Top quality economy dinnerware. Sturdy, durable Melamine plastic. Light in weight; easy to handle.



ARROWHEAD CAFETERIA TRAYS
Plate and tray all in one. Easy to wash. Easy to stack. Space-saver, labor-saver, money-saver. Won't break!

NEW **CRYSTALON** TUMBLERS
Shatterproof! Safe in automatic dishwashers
Won't chip!
5 sizes: 12 oz.; 10 oz.; 8 oz.; 5 oz.; 4 oz.
WRITE FOR SAMPLE
Ask your jobber or send for catalog
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factors as hours of service, turnover, and check average.

THE MODERN HOSPITAL

Vol. 85, October, 1955
*Say "cheese"—it makes meals inviting.—p. 102.
*Cheeseburgers on the assembly line. E. H. Tuft. —p. 104.

Cheese Makes Meals Inviting. Modern cheese packaging provides the portion control so helpful to the hospital dietitian. Cheese in slices reduces handling and waste, and at the same time is a most attractive product. Cheese provides taste appeal in therapeutic diets and in some forms has special value in pre-operative and post-operative menus. It is an excellent food for maternity patients. Serving cheese also serves an educational purpose, for it illustrates to whose who have been existing on substandard diets that good eating goes hand in hand with good nutrition, and that delicious, well-balanced meals can be both economical and easy. In a recent report on the comparative retail price of various protein foods, cured Cheddar had the lowest price per pound, with the exception of hamburger, cottage cheese, evaporated milk, and nonfat dry milk. Storage of cheese presents no special problems, although it should be kept under refrigeration. Cut portions are best wrapped in aluminum foil, and cut pasteurized process cheese keeps well if rewrapped in the original wrappings. Exception for Camembert, cheese should not be frozen because flavor and texture changes result. The author lists some of the important types of cheeses, with descriptions and suggestions for use.

Cheeseburgers on the Assembly Line. At Wesley Memorial Hospital, Chicago, a system has been devised for producing cheeseburgers by assembly-line technique. An ordinary soda fountain dispenser is fitted over No. 10 cans of a liquid-like cheese. The cans stay hot in a steam-table pan of hot water. When hamburgers-on-buns are carried down the moving-belt line, an attendant presses the plunger and spreads the cheese sauce over the hamburger. Accompanying photographs illustrate this technique and recipes for popular cheese dishes are included.

PRACTICAL HOME ECONOMICS

Vol. 34, October, 1955
*Florida schools tackle vitamin C deficiency.—p. 48.

Orange Juice Campaign in Florida Schools. Florida schools are participating in a statewide orange-juice-dispensing program which has helped to change the food habits of children exposed to it and has given home economics and family living teachers an opportunity to teach good food habits. The program was started after several national nutritional surveys showed evidence of wide-spread ascorbic acid deficiency. Pilot studies were undertaken in twenty "volunteer" schools in 1953, through the cooperation of the Florida Citrus Commission and the Paper Cup and Container Institute. Although the need for orange juice, or other citrus products had been demonstrated, it was found that to bring the importance of the program to both children and parents, a nutrition education program was necessary. Suitable materials were developed during one summer of in-service training for teachers at Florida State University. The program is self-supporting in the majority of schools, and these schools have found that they can make a profit (including the cost of the paper cup) on the sale of 5 oz. orange juice served for 5 cents. The profit pays for juice for children who can't afford it and for other projects. Frozen concentrate is usually used, reconstituted three to one and served from refrigerated juice dispensers. Stationary dispensers are used, to which one child from each class comes to obtain the juice and then carries the cups for his entire class back on a tray. The dispensers can also be wheeled on steel wagons to the doorways of the classrooms.

RESTAURANT MANAGEMENT

Vol. 77, September, 1955
*Your forgotten customer. W. W. Bauer.—p. 46.
*Low calorie foods. M. Casteen.—p. 66.

Restaurant Diners on Therapeutic Diets—The Forgotten Customers. For those who must follow therapeutic diets, eating away from home can be a serious problem because of the difficulty in finding the right food on the typical restaurant menu. By helping this patron, the restaurant operator will in the long run help himself, for a therapeutic department could develop into an untapped source of revenue. Catering to this type of diet customer has advantages: it is a public service; it is one way to get a hold on steady customers; it will build a reputation for you which will bring in new customers; and it will be profitable. To initiate this service in many cases requires only a slight change in the menu. The addition of fresh fruit, water-packed fruits, and cheese to every dessert list would render a great service to the diet-restricted customers. Skim milk is another item this group would appreciate seeing on your menu. Letting customers know that you will furnish an artificial sweetener if it is requested would please many. A cream soup, selection of fish, poultry, or egg dishes, or baked beans would suffice for those who must avoid meats, meat soup, and meat gravies. The low-sodium diet poses the most serious problem to the restaurateur, as it means extra cooking and extra stocks of supplies, as well as knowledge on the part of the chef as to what really constitutes a low-sodium diet, but this extra expense would gladly be paid by an expanding clientele.

Low-Calorie Foods. To make it easy for patrons to eat less, restaurants should plan one or two attractive dinners featuring smaller portions and less fattening entrées and desserts. This article contains suggestions for low-calorie menu-making as well as suitable recipes for salads and dressings.

Pork in the Dietary During Pregnancy and Lactation

CERTAIN NUTRIENTS are required in greater than normal amounts during pregnancy and lactation. Pork meat, though its cost is low, supplies a remarkably high quantity of the nutrients required by the maternal organism in these periods of physiologic need.

During pregnancy the maternal organism may store 3.3 to 5.5 pounds of protein in excess of that contributed to fetal tissue.[1] Enough iron is stored to approximate the entire amount secreted in the milk during 9 months of lactation, in addition to the iron supplied to the fetus.[2]

The body of the newborn infant contains approximately 500 grams of protein, 14 grams of phosphorus, and 0.5 gram of iron.[3] It is estimated that the lactating mother, through breast milk, provides a 26 week old infant with about 12 grams of protein, 76 grams of lactose, and 1.2 mg. of iron each day.[2]

Pork meat, an excellent source of high quality protein, thiamine, niacin, and iron,[4] also supplies valuable amounts of other B vitamins, as well as phosphorus, magnesium, and potassium. The thiamine content of pork is particularly important, since there are few more valuable food sources of this vitamin.[4]

Pork and pork sausage—economical, good tasting—are valuable components of the dietary of the pregnant or lactating woman. Just how valuable, is shown in the table below.

1. Toverud, K.U.; Stearns, G., and Macy, I.G.: Maternal Nutrition and Child Health, an Interpretative Review, Washington, D.C., National Research Council, Bull. 123, 1950.
2. McLester, J.S., and Darby, W.J.: Nutrition and Diet in Health and Disease, ed. 6, Philadelphia, W.B. Saunders Company, 1952, p. 241.
3. Marrack, J.R.: Food and Planning, London, Victor Gollancz, Ltd., 1943, p. 67.
4. Wolgamot, I.H., and Fincher, L.J.: Pork Facts for Consumer Education, Washington, D.C., United States Department of Agriculture, AIB No. 109, 1954.
5. Watt, B.K., and Merrill, A.L.: Composition of Foods—Raw, Processed, Prepared, Washington, D.C., United States Department of Agriculture, Agricultural Handbook No. 8, 1950.
6. Bowes, A. deP., and Church, C.F.: Food Values of Portions Commonly Used, ed. 7, Philadelphia, Anna dePlanter Bowes, 1951.

Percentages of Recommended Daily Dietary Allowances* for Pregnant (3rd Trimester) and Lactating Women Provided by 3-Ounce Portions of Cooked Pork Meats and Pork Sausage

	Protein	Iron	Phosphorus	Thiamine	Riboflavin	Niacin	Calories
PREGNANCY (3rd trimester)							
Ham, without bone, 3 oz., cooked[5]	25.0%	17.3%	13.5%	30.0%	10.0%	26.7%	12.5%
Pork Chops, without bone, 3 oz., cooked[5]	25.0%	17.3%	13.3%	47.3%	10.0%	28.7%	10.5%
Pork Sausage, 3 oz., cooked[6]	17.3%	14.0%	9.2%	27.7%	10.1%	18.5%	14.7%
LACTATION							
Ham, without bone, 3 oz., cooked[5]	20.0%	17.3%	10.1%	30.0%	8.0%	26.7%	10.2%
Pork Chops, without bone, 3 oz., cooked[5]	20.0%	17.3%	10.0%	47.3%	8.0%	28.7%	8.6%
Pork Sausage, 3 oz., cooked[6]	13.8%	14.0%	6.9%	27.7%	8.1%	18.5%	12.0%

*Recommended Dietary Allowances, Washington, D. C., National Academy of Sciences—National Research Council, Publication 302, 1953

The nutritional statements made in this advertisement have been reviewed and found consistent with current medical opinion by the Council on Foods and Nutrition of the American Medical Association.

American Meat Institute
Main Office, Chicago... Members Throughout the United States

News Notes

Tenth Anniversary of FAO. In October, FAO (Food and Agriculture Organization of the United Nations) celebrated its tenth anniversary. The occasion was noted in an observance at Chateau Frontenac in Quebec, where the organizing conference was held ten years ago. In the past decade, FAO has grown from the original forty-two nations who were charter members to seventy-one.

Objectives of FAO are: (a) to raise the levels of nutrition and standards of living of the people in their country and the world; (b) to secure improvements in the efficiency of production and distribution of all food and agricultural products; (c) to better the condition of rural populations; and (d) to contribute toward an expanding economy. To achieve these objectives, FAO activities are centered mainly in three fields: collecting, analyzing, and disseminating information; furnishing technical assistance; and promoting needed national and international action.

In assessing the nutrition work of FAO, Dr. Hazel K. Stiebeling, Director of Human Nutrition and Home Economics Research, U.S.D.A., notes that through FAO, the science of nutrition is being applied with increasing effect and precision in determining food consumption, in formulating recommendations to governments on food policy, and in solving practical problems of food and nutrition. The FAO nutrition work falls under three headings: (a) study and appraisal of food consumption on a world, regional, and national basis, in order to assess changes and developments in food production and supply needed for satisfactory nutrition; (b) study and application of specific measures to insure the most effective use of available food supplies, with special reference to food conservation and food processing, and supplementary feeding of vulnerable groups, and education in nutrition; and (c) direct assistance to governments in developing practical programs in nutrition and home economics, alone and in collaboration with other UN agencies, in particular WHO and UNICEF.

Progress is also being made in home economics. Real improvement in nutrition and in levels of living depends largely on women in the home. Home economics education can help expedite the improved utilization of home and family resources for better living.

FAO technical assistance has aided many countries in the last ten years. Greece, for example, has set up a national nutrition service on FAO's recommendation. The locust problem in several Central American and Middle Eastern countries has been minimized through a cooperative program in which FAO has assisted.

Many international commissions and study groups have also been established through the aid and encouragement of FAO. An example is the International Rice Commission, whose purpose is to raise rice production and consumption in rice-eating countries.

In reviewing the agricultural development of the last ten years, FAO reports that world agricultural production was more than 25 per cent greater in 1954 than in 1946–47 (excluding Communist countries). The world is now producing about 20 per cent more rice, milk, and cotton than before the war; about 30 per cent more wheat, fats, and meat; 50 per cent more fruit and sugar; and 80 per cent more natural rubber. World fisheries production, seriously reduced during the war because of loss of fishing boats, has increased 20 per cent over prewar figures.

At war's end, FAO estimated that world agricultural production was down 5 per cent and world population up 10 per cent over prewar levels, with a consequent per capita fall in production of about 15 per cent. By 1954 this lag had been overtaken, and in some countries surpluses were beginning to develop in wheat, sugar, and cotton.

FAO has created a committee specifically to work toward an orderly solution of the problems of surplus crops in several countries. This committee, made up of representatives of twenty-one governments, including the U.S., periodically meets to discuss possible solutions to the surplus commodity situation.

A.M.A. Council on Foods and Nutrition. A new program for the Council on Foods and Nutrition of the American Medical Association was announced in the October 22, 1955 issue of *J. A. M. A.* In spelling out this new program, it was pointed out that the activities of the Council will be directed toward meeting three objectives: (a) formulating desirable nutritional standards for foods and expression of opinions on their wholesomeness and usefulness, emphasizing those foods that have public health significance or are important in feeding special population groups; (b) indicating what it believes to be desirable criteria for formulating accurate and informative advertising copy pertaining to foods and nutrition; and (c) reporting to the profession and educating the public on all aspects of nutrition.

To implement these objectives, desirable standards for certain classes of foods will be developed and reviewed periodically. Also, standards for general purpose foods, such as vitamin D milk, iodized salt, and citrus juices, will be developed. Since other properties of foods are subject to governmental regulation, the standards proposed by the Council will be directed toward the improvement of the nutritional aspects of foods. These standards, as well as informational reports on labeling laws and the use of the Council standards, will be published in the *J. A. M. A.* The Council also proposes to determine from time to time by independent evaluation whether products claimed to meet Council standards actually do so. Incidents of mislabeling will be called to the attention of the appropriate authorities or to the profession as indicated.

In the area of advertising, the Council plans to revise its booklet, "General Decisions on Foods and Food Advertising." Educational food advertising will continue to interest the Council. A program will be conducted as in the past, except that a seal will not be granted. When an educational advertisement has been reviewed favorably by the Council, permission will be granted to use a statement to this effect.

Interpreting and disseminating the findings of nutritional research has been recognized as a responsibility of the Council, and expansion of this activity is being carefully explored. The program of nutrition education will provide a source of accurate information for presentation to the medical profession and the public in national and local programs. The Council expects to sponsor conferences of high professional interest and will prepare educational material for medical publications. When requested, it will check for accuracy suitable news releases for the public press.

Nutrition Foundation News. At its annual meeting in New York City in November, the Board of Trustees of The Nutrition Foundation, Inc., appointed John Holmes as President, to succeed the late George A. Sloan. Mr. Holmes is Chairman of the Board, Swift & Co., Chicago. Also, Dr. Charles Glen King, Scientific Director of the Foundation, has been appointed Executive Director.

Announcement was also made at the meeting of the approval of eleven new grants for research in nutrition. This brings the total funds granted by the Foundation since its inception to more than $3,550,000. Grants have gone to seventy-five universities and colleges in the United States, Canada, and Central America in support of basic research and education. Beginning in 1942 with an original group of fifteen corporations supporting the Foundation, its present membership numbers fifty-five companies in the food and related industries.

Conference. "Nutritional and Metabolic Considerations in Disease" was the subject of a conference on November 9 in Philadelphia, sponsored by the Commission on Nutrition, Medical Society of Pennsylvania; Philadelphia County Medical Society; and The National Vitamin Foundation. The 3-hr. conference included the following papers:

"Diagnosis and Treatment of Nutritional Disturbances"—Dr. Norman Jolliffe, New York City Department of Health

"Nutritional Aspects of Cardiovascular

HOW HEINZ KETCHUP GETS ITS CAN'T-BE-COPIED FLAVOR

1 To get tomatoes good enough for Heinz Ketchup, we had to develop our own private strain on our Heinz experimental farms. Here they're checked to make sure they were at the peak of ripeness when picked.

2 The spices are weighed and blended, following Heinz secret, time-tested formula. The vinegar and sugar are carefully and accurately measured in. The onions, mild Californians only, are added.

3 We take our time cooking it down—for you can't rush good ketchup. And the results in batch after batch—thick, deep red and savory—are assured by Heinz know-how. The skills of our 50 years of ketchup making can't be matched overnight.

4 Make sure the can't-be-copied flavor of Heinz Ketchup is working for you. Served as a condiment or cooked into the dish, Heinz does more for food than any other ketchup. For the difference it makes, the cost is trifling. Order the famous 14-ounce bottle or #10 tin.

HEINZ 57 KETCHUP

YOU KNOW IT'S GOOD BECAUSE IT'S HEINZ

Why Do Dietitians Favor Juice-Pak Fruits?

In more than 1,000 hospitals, Dietitians keep a supply of Cellu Juice-Pak because (1) It means the very finest quality sun-ripened fruit. (2) Packed in its own natural juice, without added sugar. (3) As much fruit is used to produce the juice as it takes to provide the foods and flavor in the can, thus giving extra value.

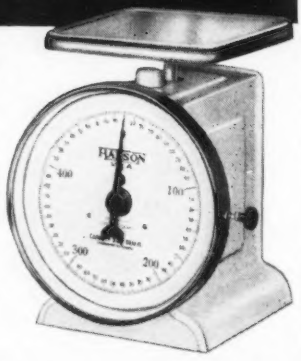
CELLU® flavorful DIET FOODS

Send for latest price list and catalog of over 300 Cellu Diet Foods.

CHICAGO DIETETIC SUPPLY HOUSE, INC.
CHICAGO 12, ILLINOIS

2 HANSON SCALES

that work together in restricted diets and weight control.



DIETETIC SCALE, standard with the medical profession for controlled diets. Rotating dial eliminates computation as each item of food is added on the serving plate. Capacity 500 grams by grams. Stainless Steel platform, white enamel body, easy to keep clean.

Model 1411 (illst.) has glass protected dial, price **$15.00.**

Model 1440 enamel dial, price.....**$10.00**

Weighmaster the personal scale, dependable for checking gain or loss in weight under medical supervision. Graduations are easy to read. The Weighmaster is precision built and triple tested for accuracy.

Available in seven bathroom colors and all chrome.
Prices **$7.95** for colors, **$10.95** for all chrome.
(Far west 50c higher)

See your supply house or local drug store

HANSON SCALE CO. *(Est. 1888)* **Northbrook, Illinois**

Disease (Hypertension and Coronary Artery Disease)"—Dr. Irvine H. Page, Cleveland Clinic

"Nutrition and Metabolism in Relation to Neurology and Psychiatry"—Dr. Douglas Gordon Cambell, University of California, Berkeley

"Nutrition in Relation to Surgery"—Dr. I. S. Ravdin, University of Pennsylvania, Philadelphia

Symposium on Diabetes. On October 27, a symposium on "The Pituitary-Adrenal System and Diabetes Mellitus" was sponsored by the Clinical Society of the New York Diabetes Association in New York City. The program included:

"Current Concepts of the Action of Insulin"—C. F. Cori, M.D., Washington University School of Medicine, St. Louis

"Metabolism of C^{14} Labelled Glucose in Diabetes"—Nome Baker, Ph.D., Radioisotope Unit, VA Hospital, Cleveland

"*In Vitro* Observations of Endocrine Relationships in Carbohydrate Metabolism"—M. E. Krahl, Ph.D., University of Chicago

"The Role of Insulin and Contra-Insulin Hormones in Metabolism of the Liver"—Rachmiel Levine, M.D., Michael Reese Hospital, Chicago

Plentiful Foods MONTHLY LIST

The Department of Agriculture announces that pork will be the featured "plentiful food" during December. The entire list includes:

Protein foods

Beef
Chickens—broilers and fryers
Dairy products
Pork
Tuna, canned
Turkeys

Other foods

Cranberries
Dates
Grapefruit
Grapes
Lard
Pears, winter
Potatoes
Sweet potatoes
Vegetable fats and oils

Booklet on Food for the "Older" Years. "Many Happy Returns" is the title of a cleverly and attractively illustrated new booklet the National Dairy Council has issued to aid persons forty and over in selecting food. The theme of the booklet—that you can add life to your years by good food wisely chosen—is pointed up by discussions of protein foods and mineral and vitamin requirements. Emphasis is on the use of milk in some form at every meal and its nutritive contribution to the diet. Sample menus for a "basic plan," "moderate cost," and "lower cost," are outlined; in addition, lists of good buys in fruit and vegetables, alternates for foods rich in ascorbic acid, breads and cereals, and high-quality protein foods are given.

How to turn the tables on a special diet "delinquent"

If a special diet patient gets upset about your specifications, he's probably bored with menu-monotony. You can help right the situation by introducing a greater variety of foods—more meal appeal. Gerber offers 4 Cereals, over 65 Strained and Junior (minced) Foods to perk up ailing appetites. Gerber's Strained Foods are kind to delicate digestive systems because they're smooth in texture, low in crude fiber, blandly seasoned. True flavors, and tempting colors add to appetite interest.

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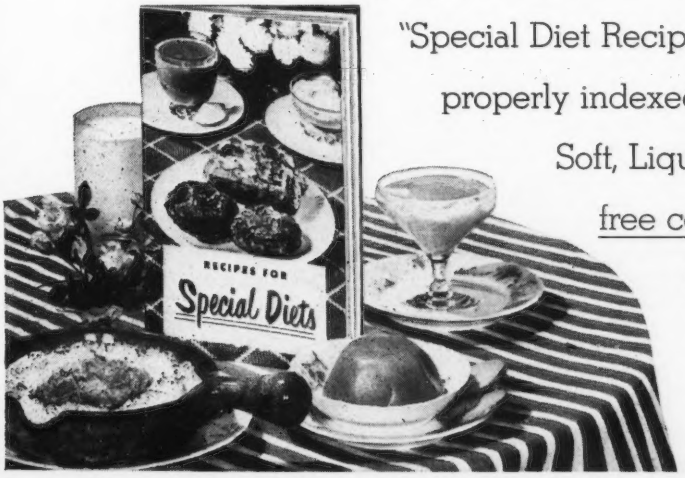

More palatable, "full course" menus are possible with Gerber's "Special Diet Recipes"—over 96 easy-to-fix dishes, properly indexed for Bland, Soft, Mechanically Soft, Liquid and Low-Residue diets. For free copies, write on your letterhead to Dept. 2312-5, Fremont, Mich.

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One page is devoted to a casual discussion of overweight. The booklet concludes with a philosophical comment on "How Old Is Old?" followed by a short summary. Copies are available for 10 cents each from the National Dairy Council, 111 North Canal Street, Chicago 6.

Government Publications. *Food Buying Guide for Type A School Lunches* is a new release by the School Lunch Branch, Agricultural Marketing Service, U. S. D. A. Introductory material includes information on influence on yield of both method of preparation and workers' skill as well as two methods of calculating the quantity of food needed for a given number of servings. The remaining twenty-seven pages present in tabular form the "Food Buying Guide" itself, with columns provided for: food as purchased, unit of purchase, size of serving, approximate number of servings per purchase unit; approximate number of purchase units to serve 100; and additional information. This last column includes such information as conversion figures for can sizes and weight, and yields for given sizes of cans. The booklet may be ordered from the Government Printing Office for 25 cents a copy.

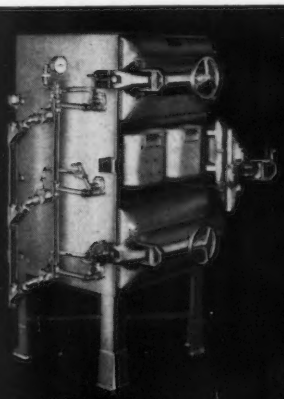
Another recent publication from the U. S. D. A. is titled "U. S. Grades for Beef," and has been issued as Leaflet No. 310. Designed to give consumers a brief explanation of beef grades, it pictures the various stamps used by government inspectors. Also included is a carcass chart indicating location of beef cuts and a "suggested cooking guide." The leaflet is on sale at the Government Printing Office for 5 cents a copy.

The report of a symposium on *Dry Whole Milk* sponsored by the Quartermaster Food and Container Institute has been issued by that organization. The report is divided into five parts: "The Problem in Review"; "Chemical Aspects"; "Manufacturing and Processing"; "Dispersibility"; and "Final Considerations." The discussion on "Chemical Changes in Fat and Lactose of Milk Products with Special Reference to Flavor" by Stuart Patton and coworkers of the Pennsylvania State University may be of special interest to dietitians. Copies of the report are obtainable from the Institute, 1819 West Pershing Road, Chicago 9.

From the Women's Bureau, Department of Labor, come two new publications on training mature women. One, Leaflet 22, presents briefly suggestions on "What a Community Can Do to Train Mature Women for Jobs." The second is a booklet, Bulletin 265, titled *Training Mature Women for Employment*. In it, twenty-three different training courses for different occupations in various parts of the country are described. The occupations covered include: institutional housekeeping, housework and related service jobs; food service occupations; the nursing occupations; and others. In the section on "Food-Service Occupations," programs in Washington, D. C. for training waitresses, hostesses, cashiers, and commercial foods workers are described. The food service training in Chicago, as given by the Rehabilitation Division of the Chicago Department of Welfare, is reported, as are courses in Denver for waitresses, cashiers, and hostesses. These programs point up the fact that facilities are usually already available in communities, and need only adaptation for training, or retraining mature women seeking employment. Copies of both the leaflet and the booklet are available from the Government Printing Office. Prices: leaflet, 5 cents a copy: booklet, 25 cents.

Employee Relations Booklet. The fifth in the National Restaurant Association's Supervisory Review Series, "Listen to the Echo," has been released. Again, the editors have achieved the happy combination of providing down-to-earth advice on a personnel problem (in this case, the advantage of the "boss" listening to his employees) in an entertaining manner. Copies may be ordered from the NRA, 8 South Michigan Avenue, Chicago 3, for 15 cents each.

Maternal Welfare. The American Committee on Maternal Welfare, Inc., of which A. D. A. is a member, has informed the JOURNAL that it will be pleased to send a complimentary issue of its *Bulletin* to our members as a means of introducing them to the work of the Committee. Reprints of the article, "Food Practices of Obstetric Patients" by George Goss Smith, C. Frances MacKinnon, and Ann Molleson from the



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January–February 1955 issue of the *Bulletin* are also available. Requests should be sent to Howard I. Wells, Jr., Managing Editor, The American Committee on Maternal Welfare, Inc., 116 South Michigan Avenue, Chicago 3.

Post-Graduate Course in Therapeutic Nutrition. As part of its post-graduate education program, the Southwestern Medical School of the University of Texas will present a two-day course on therapeutic dietetics, February 10 and 11, at Parkland Memorial Hospital, Dallas. This seminar, or refresher course will be sponsored jointly by the School and The Dallas Hospital District. The tentative program, as released, indicates that the following subjects will be covered:

Care of patients with sub-total gastrectomy
Diet in diabetes and in juvenile diabetes
The dietitian's role on the hospital team
Geriatric food problems
Lipid metabolism
Organization of a hospital diet manual
Protein metabolism
Physiology of the gastro-intestinal tract
Rationale of various diets for gastro-intestinal disease
Test diets and their purposes
Therapeutic pediatric diets
Trends in nutrition in relation to medicine today

Dietitians are cordially invited to attend this course. Further details may be obtained from: Assistant Dean, Postgraduate Education, The University of Texas Southwestern Medical School, 5323 Harry Hines Blvd., Dallas.

Army Dietitian Receives WAC Training. Capt. Mary Ann Neacy, AMSC dietitian, is currently attending the twenty-week advanced WAC officer course at Ft. McClellan, Alabama. This is the second time that a dietitian officer of the Army Medical Specialist Corps has participated in the administrative training program of the Army's sister service, the Women's Army Corps. Capt. Neacy is Chief, Food Service Division, U. S. Army Hospital, Ft. McClellan.

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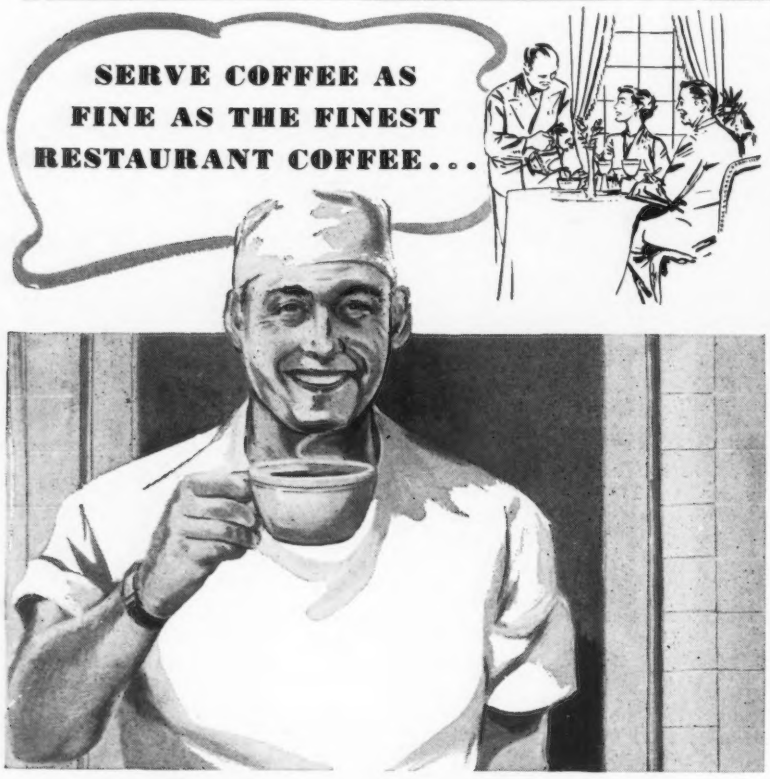
Dr. Harold R. Sandstead. A loss to the field of nutrition was sustained in the air line crash in Colorado on November 1, killing all aboard. Among the passengers was Dr. Harold R. Sandstead, National Institutes of Health, U. S. Public Health Service, Bethesda, Maryland. Dr. Sandstead was Executive Director of the Interdepartmental Committee on Nutrition for National Defense and had also served as U. S. representative at several recent international conferences on nutrition. He had studied nutrition in the Far East and Middle East, and quite recently was a member of a team making a nutrition study on the Navajo Reservation. He had also been doing research on parotid gland enlargement and its relation to nutrition. Dr. Sandstead, prior to his connection with the National Institutes of Health had been with the former Nutrition Section, States Relations Division, U. S. Public Health Service. The JOURNAL published in February 1947 a paper for which Dr. Sandstead was co-author, which had been given at the 29th Annual Meeting of The American Dietetic Association in Cincinnati in 1946.

News of State Associations

Colorado Dietetic Association. The fall convention of Colorado dietitians and home economists was held in Denver, October 28 and 29. Principal speakers and their subjects were:

"Radio Isotopes in Medicine"—Dr. Harold Elrick, Chief Director, Radio Isotope Units, VA Hospital, Denver
"Atomic Bomb Tests"—Hazel Fehlman, Head, Department of Food and Nutrition, University of Colorado, Boulder
"Child Nutrition and Nutrition Education"—Dr. Ercel Eppright, Head, Foods and Nutrition Department, Iowa State College, Ames
"Colorado Women—Organized for Effectiveness"—Helen White, President, Colorado Coordinating Council of Women's Organizations
"Household Finances"—Katharine Schaeffer, Household Finance, Inc., Chicago
"Human Relations at Home"—Byron Lopp, Director, Central Bank & Trust Company, Denver

Business managers and cooks from the hospitals of northeastern Colorado



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met at Sterling on September 8 for training sponsored by the Northeastern Colorado Hospital Council, the State Public Health Department, and the Colorado Dietetic Association. It was the first of a series of food service conferences. Main topics of dicussion were menu planning and cost control. Margaret Cowden Bernard and Doris Odle participated in the program.

Florida Dietetic Association. On November 2, 3, and 4, the Florida Dietetic Association met in Miami.

On November 3, a panel discussion on community nutrition was presented, with community representatives participating. A second session that day featured Dr. Julian Boyd, VA Hospital, Miami, who spoke on "The Regulation of Diabetic Children." A symposium on "Food Cost Control" was also presented, participants including: Jane Hartman, Maryland Department of Health, Baltimore; Dorothy Nonenberger, VA Hospital, Bay Pines; and John Fellers, State Tuberculosis Board, Tampa.

On the final day of the meeting, the following papers were heard:

"Application of Time and Motion Study to Food Service"—Jean P. Lesperance, Ph.D., Time and Motion Laboratory, University of Miami

"Modern Aspects of Refrigeration"—Walter O. Walker, Dean, Division of Research In Industry, University of Miami

"Recent Research in Nutrition"—Thelma D. Porter, Ph.D., Committee on Home Economics, University of Chicago

Georgia Dietetic Association. The campus of the Georgia State College for Women, Milledgeville, was the scene of the fall meeting of the Georgia Dietetic Association on November 4. Dr. Francis Hicks, Psychology Department of the College, spoke on "Psychology and Health," while Knox Walker, Vice-President, National Congress of Parents and Teachers, discussed "nutrition and the School Child." A report on the "Civil Defense Activities During the Nuclear Explosion Test" was made by Mrs. Gerry Stukes, Deputy Director, Office of Volunteers, Southeastern Area, American Red Cross.

Offices for 1955–56 for the Georgia Association include: President, Josephine Martin, State School Lunch Program Supervisor, Atlanta; President-Elect, Helen B. Bose, Stone Mountain; Treasurer, Florence K. Whelchel, School Lunchroom Supervisor, Decatur; and Secretary, Marie Townsend, University of Georgia, Athens.

Indiana Dietetic Association. Fort Wayne dietitians were hostesses to the Indiana Dietetic Association at a dinner on November 8. Speaker of the evening was George Garnatz, Director, Kroger Food Foundation, Cincinnati, who spoke on "New Trends in Foods."

New President of the Indiana Association is Martha McBride, Administrative Dietitian for Residence Halls, Indiana University, Bloomington.

Iowa Dietetic Association. Ruth Huston and Joan Wanamaker of Des Moines were in charge of the Iowa Dietetic Association's booth at the Iowa State Fair in August. The exhibit was an attractive display of the three daily meals for an adequate diet.

The *Des Moines Dietetic Association* held its first meeting of the year in September. The topic of the evening was "Frozen Milk."

Officers of the *Iowa City Dietetic Association* are: President, Celia Brain, VA Hospital; Vice-President, Ruth Gunning; Treasurer, Olga Cartwright; and Secretary, Ellen Clewell.

Kentucky Dietetic Association. The Kentucky Dietetic Association met at the University of Kentucky, Lexington, on November 12. The principal speaker was Dr. Wallace H. Herrell, who talked on "Antibiotics."

New officers for 1955–56 are: President-Elect, Elizabeth B. Woodard, Louisville; and Treasurer, Martha Bowling, Louisville.

The Kentucky Dietetic and Hospital Associations jointly sponsored a two-day Institute for Food Service Employees in Louisville in October. Elizabeth Banes, Mary Lou Vaughn, and Elizabeth Woodard were on the program committee, and the Association was represented on the program through speakers, discussion leaders, and presiding officers. Subjects covered included: "Finding the Right People for

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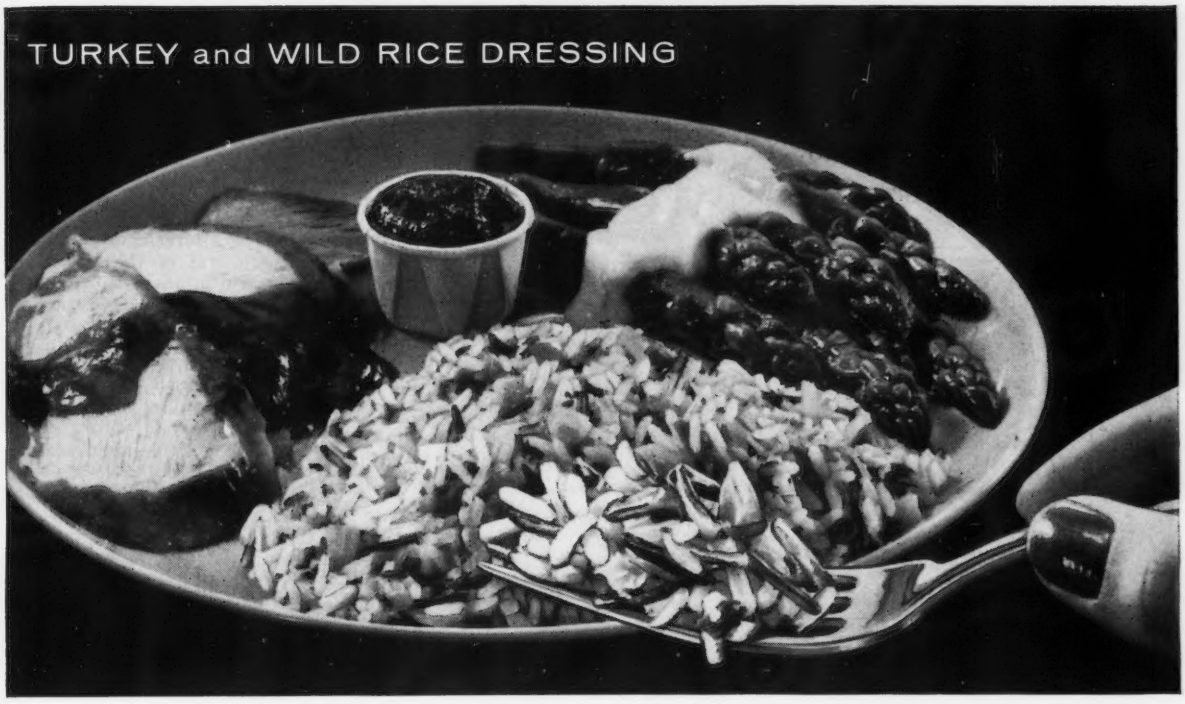

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Makes fifty 6-ounce servings (approximately).

Uncle Ben's Converted Rice, uncooked	3 pounds
Wild rice uncooked	1 pound
Stock or bouillon (well seasoned)	4½ quarts
Monosodium glutamate	1 tablespoon
Butter or margarine	1 pound
Giblets, ground	2 pounds
Green pepper, minced	1 pound
Celery, minced	2 stalks
Green onions, minced	1 quart
Parsley, minced	1 bunch
Eggs, beaten	8
Poultry seasoning (or other poultry seasoning desired)	4 tablespoons
Salt and pepper	as needed

Wash Uncle Ben's Rice and wild rice thoroughly. Stir into boiling stock or bouillon. Add monosodium glutamate. Turn heat low, cover, and cook 25 to 30 minutes—or until rice is tender and liquid absorbed. While rice is cooking, sauté ground giblets, green pepper, celery, green onions, and parsley in butter or margarine until vegetables are tender. Combine with cooked rice. Beat seasonings with eggs and combine with mixture. If needed, add more stock or bouillon to give stuffing sufficient moistness. Stuff fowls or place mixture in pans and bake covered for approximately 1 hour.

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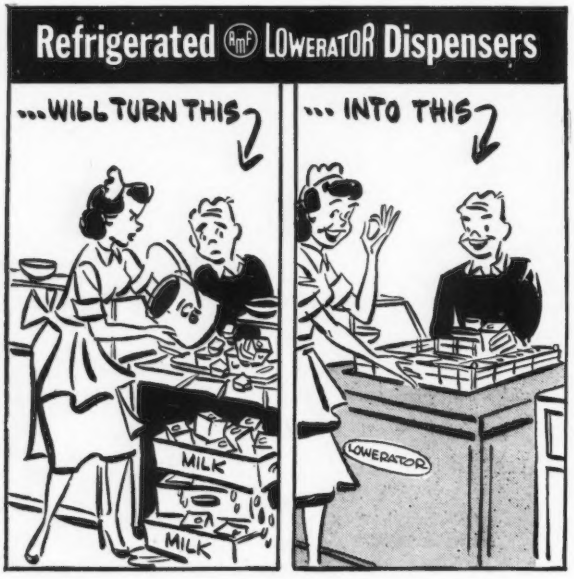

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the Right Job"; "On the Job Training"; "Menu Planning"; "Modified Diets"; "From Market to Storeroom"; "Food Preparation"; "From Kitchen to Patient"; "Sanitation"; "Personal Hygiene"; and "Safety."

Maryland Dietetic Association. The Diet Therapy Section of the Maryland Dietetic Association, under the direction of Margaret Graham, has completed and distributed a low-calorie booklet designed to help small institutions which do not have the service of a dietitian.

Massachusetts Dietetic Association. Dietetic interns of the Boston area were welcomed by the members of the Massachusetts Dietetic Association at a coffee hour held at Simmons College, Boston, on October 4. Highlight of the evening's program was a discussion of the question: "Can Professions Survive in Our Culture?" Panel guests were: Dr. Thomas B. Quigley, Assistant Clinical Professor of Surgery, Harvard School of Medicine; Lester F. VanderWerf, Ph.D., Dean, College of Education, Northeastern University, Boston; Mary Sullivan, Director, Visiting Nurse Association, Boston; Rev. Eric M. Rickard, Assistant Minister, Old South Church, Boston; and Diana Ballin Abbot, Lecturer on Nutrition, Simmons College, Boston.

Fifteen hospitals and agencies, including the Massachusetts Dietetic Association, participated in the dietary exhibit section of the Diabetes Fair held in Boston in November. The exhibit emphasized the normal as well as the diabetic aspects of nutrition.

Minnesota Dietetic Association. Civil defense training in mass feeding has been a project sponsored by the Civil Defense Committee of the Minnesota Dietetic Association during the past year. Consisting of six 2-hr. periods, the training course included: setting up emergency feeding stations, quantity cooking under adverse conditions; sanitation and sterilization of equipment; water pollution; sandwich production lines; building a fire; and cooking with a reflector oven. Outdoor practice was done under the guidance of Y. M. C. A. camp trail directors. Cooperating groups included the American Red Cross, Minneapolis Civil Defense Office, State Civil Defense Committees, and Twin Cities Dietetic Association.

Officers of the Minnesota Association for 1955-56 are: President, Alberta Gurtler, Ramsay County Welfare Board, St. Paul; President-Elect, Sister M. Bernadette Lies, Director, Department of Foods and Nutrition, College of Saint Teresa, Winona; Treasurer, Jeannette Kirby, Glenn Lake Sanitarium, Oak Terrace; and Secretary, Ruth Franklin, Metabolism Therapy, Mayo Clinic, Rochester.

Nebraska Dietetic Association: The fall convention of the Nebraska Dietetic Association was held in Lincoln on October 13 and 14, in conjunction with the Nebraska Hospital Association and related groups. Speakers were: Ray E.

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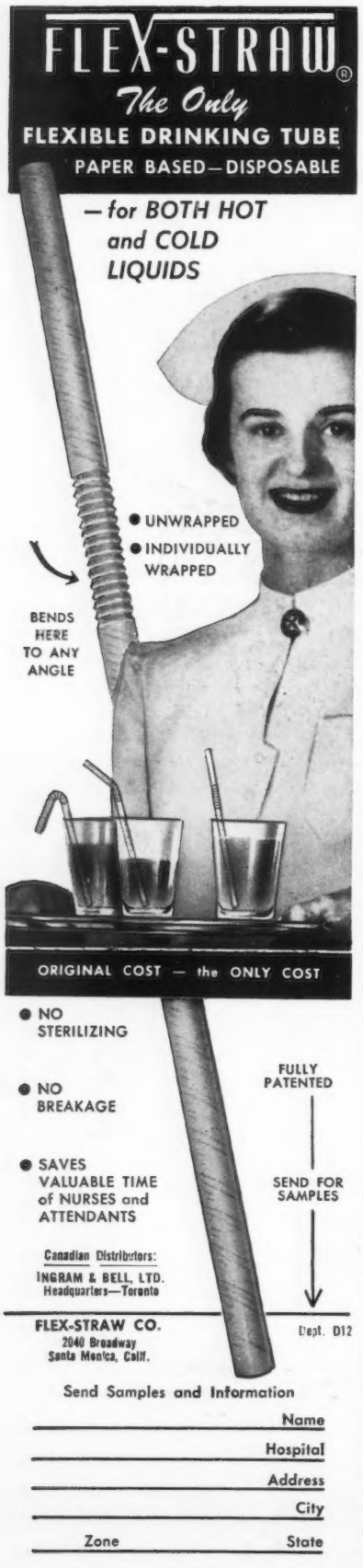

Brown, President, American Hospital Association and Superintendent, University of Chicago Clinics, and Helen Linkswiler, Ph.D. Two panel discussions were presented: the first, "The Team Speaks Up," was moderated by Everett W. Jones, Vice-President, Modern Hospital Publishing Company, Chicago. The second dealt with "Vitalizing Nutrition for the Student Nurse" with Anna Smrha, State Department of Health, Lincoln, Moderator; Ruth Stief, Nutrition Consultant, Minnesota Department of Health, Minneapolis; Dorothy L'Heureux, Mary Lanning Memorial Hospital, Hastings; and Edith Palmer, Bryan Memorial Hospital, Lincoln, were the panelists.

South Dakota Dietetic Association. The South Dakota Dietetic Association held its annual meeting in Yankton on November 16 and 17. The program included:

"Fruits and Vegetables"—H. Rich, Sioux City
Round table discussion on Newest Trends in Diet Therapy Experience for Student Nurses
Panel on "Nutrition and the Mental Ill"

Tennessee Dietetic Association. A Food Institute for Food Service Employees was sponsored by the Tennessee Dietetic Association in Memphis last spring. In five afternoon meetings, the following subjects were covered:

"Personnel Relationship and Management"—Ila Huff, Director, Memphis Girls Club
"Responsibilities of Supervisors"—Herbert A. Chase, Assistant Manager, Kennedy VA Hospital, Memphis
"Normal Nutrition"—Doris Caldwell, Memphis
"Purchasing, Receiving, and Storing of Food Supplies"—Mary D. Musselwhite, Methodist Hospital, Memphis
"Menu Planning"—Roberta Wertz, LeBonheur Children's Hospital, Memphis
"Quanity Food and Its Preparation"—Elizabeth Gibson, U. S. Public Health Service, Memphis
"Easier Work Method"—Pearl Wilson, Dietetic Service, Kennedy VA Hospital
"Hygiene and Sanitation"—Everett C. Handorf, U. S. Public Health Service, Memphis
"Food Portioning and Cost Control"—Mattie Burkholder, Food Manager, Plough, Inc.
"Service of Food Tray and Cafeteria"—Mila V. Tanner, West Tennessee Tuberculosis Hospital, Memphis

Association Activities

A. D. A. Annual Meeting. Attendance at our 38th Annual Meeting in St. Louis was 3623. The 258-booth exhibition set a new record.

The 39th A. D. A. Annual Meeting will be held in Milwaukee, October 9–12, 1956.

A. D. A. Membership Requirements. The Membership Requirements Committee appointed by the President in 1952 has stimulated membership thinking on the problem of reviewing membership requirements. Conclusions were presented to the A. D. A. Executive Board and changes for the Constitution were drafted, presented to the membership for vote, and passed.

The *old* academic requirements, or Plan I, will remain in effect until February. 1959. The *new* academic requirements, or Plan II, became effective November 1955.

The new experience and endorsements requirements (see page 1238) became effective following 1955 Annual Meeting.

The academic requirements f or applicants to a dietetic internship remain the same as Plan I for the present.

Further details regarding membership requirements will be made available later.

State Meetings. A. D. A. representatives attended the following state dietetic meetings:

October 27–28—Jane Hartman, North Carolina Dietetic Association, Raleigh
October 28–29—Beulah Hunzicker, Mississippi Dietetic Association, Jackson
November 2–4—Jane Hartman, Florida Dietetic Association, Miami Beach
November 3—Lucille M. Refschauge, New Jersey Dietetic Association, Orange
November 4–5—Mary Reeves, South Caroinal Dietetic Association, Greenville
November 12—Lillian S. Coover, Ph.D., Kansas Dietetic Association, Topeka
November 16–17—Marguerite L. Pettee, South Dakota Dietetic Association, Yankton
November 17–19—Ruth M. Yakel, Louisiana Dietetic Association, New Orleans
November 18–19, Mary Ellen Johnson, Arizona Dietetic Association, Tucson
November 18–19—Doris Odle, Oregon Dietetic Association, Portland

National Advisory Committee. Evelyn Anderson, Nutrition Consultant, Michigan Department of Health, Lansing, has been asked to succeed Rosemary Lodde as A. D. A. representative to the National Advisory Committee for Emergency Feeding to the Federal Civil Defense Administration, which will continue to function in a newly-organized set-up from Battle Creek, Michigan. The future program of the Committee will be closely associated with pilot studies in evacuation and other activities of significance.

Representatives at Allied Associations. Katherine Andrews attended as A.D.A. representative the *National Conference on Citizenship* in Washington, D. C., September 19–21.

At the meeting of the *American Council on Education* in Washington, D. C., October 6 and 7, Ardenia Chapman served as our official representative. The group consisting of 650 delegates from America's colleges and universities and other interested organizations was concerned with teacher and money shortages facing institutions of higher learning. Council President Arthur S. Adams outlined a four-point plan to make

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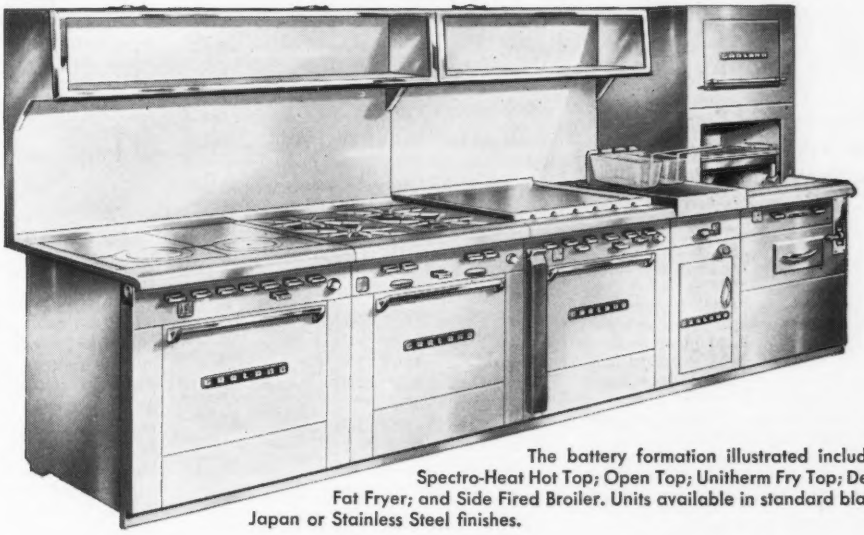

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college possible for more young people, including: better student counseling, adaptation of courses to student aptitude, new ways to make students want to continue their education, and removal of student's financial problems. Other topics discussed included: adult education programs, correspondence and television courses, higher education of military personnel, source of scholarship funds, teaching inducements, fellowship and exchange programs.

At the *National Conference on FAO*, October 12, in Washington, D. C., Marion Floyd Ackerman, our official representative, reported that the program highlighted the key issues in the U. S. participation in FAO. Panel discussions were presented for the representatives of many organizations interested in FAO's nutrition, forestry, and fishery activities. In line with greater emphasis on production in various countries, it is felt that more stress should be given to nutrition in the coming year's program of FAO. The need for education in the principles of nutrition and the unique opportunity which nutrition and home economics have in FAO were pointed out.

Marion Floyd Ackerman also represented A. D. A. at the two-day sessions of the *National Women's Advisory Committee to the Federal Civil Defense Administration*, November 3 and 4, in Washington, D. C.

Organization Guides. "Guides for the Organization of the Department of Dietetics in a Hospital" are now available from the A.D.A. office, at the following prices:

Guide for Hospital with 100 beds or less	$.10
Guide for Hospitals with 100 to 350 beds	.10
Guide for Hospitals with 400 beds or more, Plan I, or Plan II	.20
Entire set of above	.30

Diabetic Materials. The diabetic materials, prepared by committees of the American Diabetes Association, U. S. Public Health Service, and our Association, formerly available from Health Publications, Inc., Raleigh, North Carolina, may now be obtained from the A. D. A. Headquarters office:

	Each	*100 copies*
Meal Planning Booklet with Exchange Lists	$.10	$5.00
Diet Cards for Physicians	.05	.90
Meal Plans (No. 1, 2, 3, 4, 5, 6)	.05 each	.90

New Reprints List. A new listing of "Publications and Reprints" is now available from our Headquarters office on request. The list is more usable than before, as there are many subtitles in each section.

Obituary

Professor Henry C. Sherman. Those attending the 38th Annual Meeting of The American Dietetic Association were saddened to learn of the death on October 7 in Rensselaer, New York, of Dr. Henry C. Sherman, noted nutritionist whose works have been used by almost every student in nutrition and who had personally taught many present-day nutritionists. Dr. Sherman's book, *Chemistry of Food and Nutrition*, which has gone through eight editions, the last one in 1952, is well known as a standard reference in the field. To the public, he is probably better known as the man who "debunked" spinach. In his book, *The Science of Nutrition*, published in 1943, he stated that spinach was an "unfortunate choice" among green vegetables because of its high oxalic acid content. His comments stirred considerable discussion in newspapers throughout the nation.

Dr. Sherman studied at Maryland Agricultural College and received his doctorate from Columbia in 1897, having joined the staff during his graduate study in 1895. During World War II, he was Chief, Bureau of Human Nutrition, Department of Agriculture, where he was a key figure in the nutrition work directed toward survival and victory.

Dr. Sherman had received many honors, including the William H. Nichols Medal of the American Chemical Society for his achievements in vitamin research, the Medal of the American Institute of Chemists, and the annual award of the Associated Grocery Manufacturers of America. He had been an honorary member of The American Dietetic Association since 1934.

He was the author of a number of books, in addition to those listed above—among them: *Food Products; Foods: Their Values and Managment; The Vitamins; Food and Health; Calcium and Phosphorus; Modern Bread from the Viewpoint of Nutrition; and The Nutritional Improvement of Life.*

Dr. Sherman would have been eighty years old had he lived until October 16.

News of Products and Services

Pillsbury Mills has added a brownie mix to its line of institutional mixes. By adding only water, the new mix makes a rich, fudge-like bar; when one egg is added to each pound of mix, a lighter, cake-like variety is obtained. Portion cost is figured at 1.9 cents of a 2-inc. square (without nuts), making possible an 81 per cent profit. Each case of mix makes 585 2-in. squares. Brownies may be served either plain or topped with chocolate frosting, nuts, or coconut; sundae style with ice cream and chocolate or marshmallow sauce; or baked in a pie pan, cut in wedges and topped with whipped cream.

The *National Association of Frozen Packers* has appointed Carol Best as Director of its Home Economics Department. Mrs. Best was formerly on the editorial staff of the *Journal of Home Economics.*

The Nestlé Co., Inc. is distributing venison recipes which have been released for the first time to institutional operators by the New York executive chef, Henri Rousseau.

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The following abbreviations indicate the source of material indexed: "ab," abstract under Current Literature; "br," Book Reviews; "cc," Current Comment; "ed," Editorial; "f," filler; "l," Letters to the Editor; and "nn," News Notes. An asterisk indicates an original article in this JOURNAL. Book Reviews appear in the subject index under the heading, "Book Reviews." The Author Index, which follows the subject index, includes only the names of the authors of original material appearing in this JOURNAL in full or abstracted in the editorial section or in fillers, and the authors and reviewers of books reviewed.

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INSIDE SCIENCE

The Vital Story of VITAMIN A

by Science Writer

We live in a golden age of the sciences!

In the science of nutrition discoveries of food elements and their action have resulted in the promise of better health for us all.

Let's consider vitamin A as an example.

A Capsule History. 1913 was the year. Two teams working independently with animal feeding experiments discovered that a diet which was good in all other respects but which varied only in the source of fat caused young animals to thrive or sicken as the fat was varied. The work of these teams (McCollum and Davis; Osborne and Mendel) led to the discovery of the food factor which we know as vitamin A.

Composition and Action. A pale yellow, oil-soluble substance, vitamin A is expressed in the chemist's shorthand as $C_{20}H_{29}OH$. It is necessary in the diets of men and animals to promote the body's growth and development. Vitamin A is a vital requirement in guarding the health of the eyes and skin, and for resistance against infection. It helps maintain the health of mucous membranes and other specialized epithelial and glandular tissues.

Vitamin A enters the body as a constituent of food. Or it may be created within the body when a precursor of vitamin A is eaten. A precursor is a food element with potential vitamin A *value* but no actual vitamin A *content*. For instance, many green leaves have a high vitamin A value but, paradoxically, contain no actual vitamin A. The body converts the precursor into the vitamin. The most common precursor of vitamin A is beta carotene, the natural yellow coloring of many foods, such as dairy products, cereal grains, carrots, alfalfa, etc.

When consumed in food vitamin A is absorbed primarily in the healthy intestine, is esterified in the intestine's walls and is carried as an ester in the lymph and blood to the body's storage depots. The liver, which has a large capacity for storage, contains about 90% of the vitamin A found in the body.

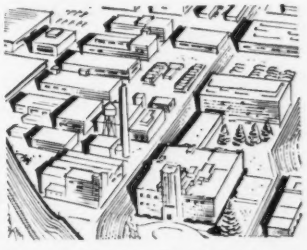
Isolation and Synthesis. It was not until 1937 that pure, crystalline vitamin A was isolated by Holmes and Corbett from fish-liver oil. Research in the synthesis of vitamin A was stimulated during the Second World War by the threat to natural sources in fish-liver oil. This work resulted in several processes to produce vitamin A synthetically. Of these, one of the most successful was evolved by the Roche research team headed by Dr. Otto Isler which was announced in 1947. Much of the vitamin A now used for pharmaceutical manufacturing and food fortification in the United States and many other countries of the world is produced by this process.

Vitamin A and beta carotene produced by the Hoffmann-La Roche synthesis have many positive advantages for food and pharmaceutical manufacturers. Among these are the complete absence of any "fishy" odor, taste, or after-taste; the reasonable and stable price; their stability, purity and uniformity and the assurance of a steady economical supply.

Vitamin A is described in the U. S. Pharmacopoeia as a fully acceptable compound for use in pharmaceutical products. The U. S. Food and Drug Administration has approved its use for the fortification of margarine and other foods.

Human Requirements. The Food & Nutrition Board of the National Research Council recommends that a daily allowance of 5000 International Units of vitamin A in the diet will maintain good nutrition of healthy adults in the U.S.A. The Board's recommendations vary above this for pregnant and lactating women, and below for infants and children. The adult dose used in therapy may vary from 50,000 to 200,000 units daily.

Production. At the huge Roche Park plant of Hoffmann-La Roche in Nutley, New Jersey, over 500 pieces of large-scale chemical engineering equipment are working constantly to produce the superior 'Roche' vitamin A. This production is so large that 'Roche' vitamin A comes from the plant actually by the tons. In fact, the entire needs of the food and pharmaceutical industries of the United States and Canada can be met from this one plant.



Again the Roche people, who have so often led the way in vitamin research and production, have made another contribution to the better health and well-being of countless millions.

This article is one of a series giving a brief resume of our present knowledge of those essential health factors—the vitamins. Reprints of this and other articles are available without charge. The Vital Story of Vitamin C was published previously and others are forthcoming. Send your request to: Vitamin Division, Hoffmann-La Roche Inc., Nutley 10, New Jersey. In Canada: Hoffmann-La Roche Ltd., 286 St. Paul St., W.; Montreal, Quebec.

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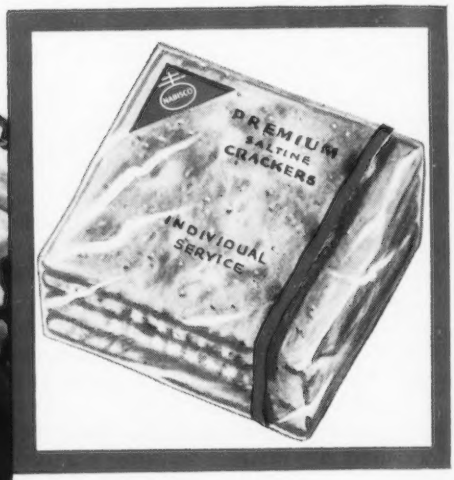

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simple drinks

Blend 1 heaping tbsp. GEVRAL PROTEIN with small amount of milk or orange juice; make smooth paste; stir in additional milk or juice to make 8 oz. For chocolate milk, prepare milk drink, then add 1-2 tbsp. chocolate syrup. For hot cocoa, add 1 heaping tbsp. GEVRAL PROTEIN to instant cocoa powder in cup; add small amount of hot water, make smooth paste; stir in enough water to fill cup.

special drinks

Vanilla Milk, 4 heaping tbsp. GEVRAL PROTEIN, 1 pint cool water, 1 cupful skim milk, 1 tbsp. sugar, ½ tsp. vanilla. Mix with rotary beater. Serve hot or cold. Makes 4 servings.

Chocolate Malted Milk. 1 heaping tbsp. GEVRAL PROTEIN, 1 tbsp. chocolate malt powder, 1 tsp. sugar, 1 glass whole milk. Mix with rotary beater. Makes 1 serving.

Egg Nog. 4 heaping tbsp. GEVRAL PROTEIN, 3 cups cool water, 1 tbsp. sugar, 2 well beaten eggs, ½ tsp. vanilla. Mix with rotary beater. Makes 4-5 servings.

other foods

Soups. Place 1 heaping tbsp. GEVRAL PROTEIN in saucepan. From ¾ cup of water, take enough to make smooth paste. Stir in remaining water, then ½ can of cream of mushroom, chicken, asparagus, or celery soup.

Cereals. One heaping tbsp. GEVRAL PROTEIN can be mixed with ½ cup hot cereal during or after cooking. Add sugar, milk, or cream to taste.

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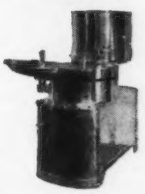

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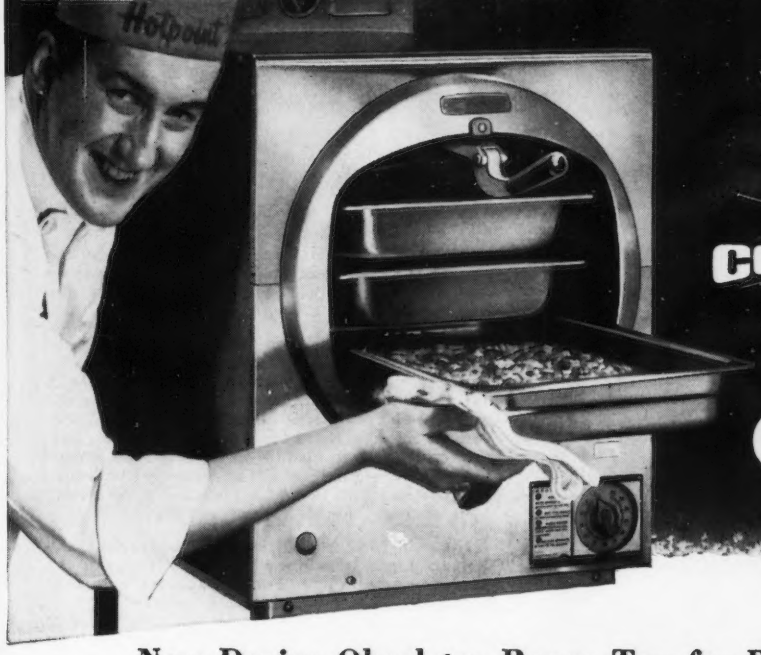

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New Device Obsoletes Range Top for Boiling and Stewing— "Years Ahead" of Ordinary Steamers!

The Hotpoint High-Compression Steam Cooker is a remarkable new device designed to cook foods over 3 times faster than ordinary methods. Speeds up to 10 times faster—or even greater—are not uncommon. Your vegetable work and much of your meat cookery can now be done with total time savings of from 3 to 8 hours a day!

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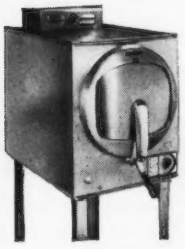

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Beans	20–35	25	4–5	89% max.
Carrots	30–35	20	3–4	92% max.
Chicken (3½ lbs.)	90–120	‡	8–10	94% max.
Corn on cob	8–15	5	3–4	80% max.
Peas	12–25	15	1	96% max.
Potatoes (quartered)	25–30	25	5–7	84% max.
Spinach	6–8,	10	1	90% max.
Turkey (25 lbs.)	150–180	‡	50–60	73% max.

* Plus average preheat time of over 20 min. ** Plus average preheat time of 2–6 min.
‡ Not normally prepared in ordinary steamer

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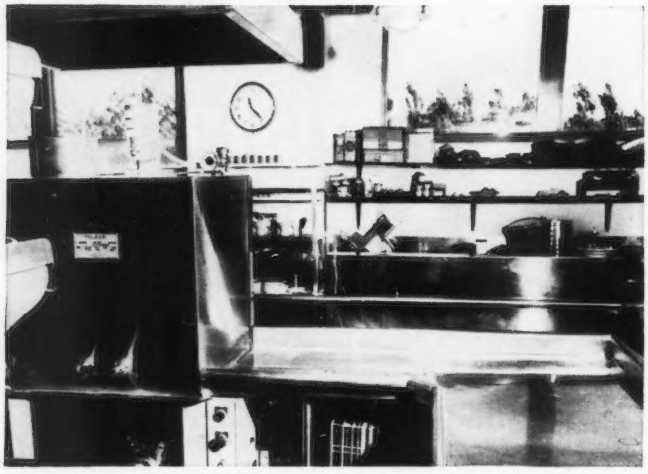
Kitchen Machines

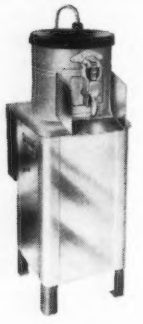


DISHWASHER . . . Model DS-27, with convenient three-way door.
Hob Nob Kitchen Equipment installed by I. Shapiro, Inc., Milwaukee, Wis.

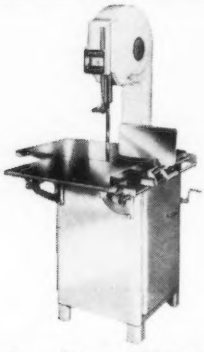
A smart place for fine food and cocktails on the shores of Lake Michigan near Racine, Wisconsin . . . the new Higgins Hob Nob, with its distinctive dining deck.

In the Hob Nob kitchen are modern Toledos to provide work-saving efficiency step by step in food service operations. Installed here are a Toledo Door-Type Dishwasher to streamline the washing and rinsing of dishes . . . a Toledo Slicer with illuminated platter and gravity-feed, plus new ease and safety in cleaning . . . a Toledo Power Meat Saw designed for safe and speedy operation, ease of cleaning . . . and a Toledo Potato Peeler with efficient "double action" peeling.

Write for further information concerning the Toledo Line, offering a complete selection of Toledo Dishwashers, Food Machines and Disposers for all restaurant requirements.



PEELER . . . sharp abrasive on both disc and cylinder insures complete "skin deep" peeling with minimum waste.



SAW . . . faster cutting, faster cleaning. Large capacity. Illuminated meat table.

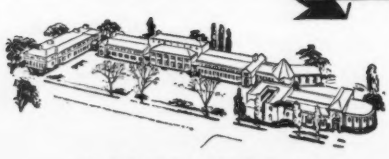
SLICER . . . conveniently located for slicing meat, cucumbers, tomatoes, and other foods.

SERVICE Factory-Trained 200 Cities

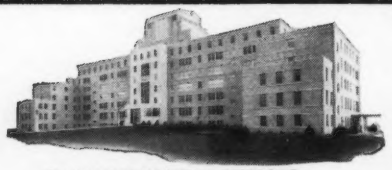
TOLEDO SCALE COMPANY

Kitchen Machine Division, 245 Hollenbeck St., Rochester, N. Y.

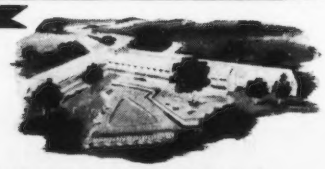
TYPICAL RECENT TOLEDO INSTALLATIONS



TREADWAY INN, ROCHESTER, N. Y.



ST. CHARLES HOSPITAL, TOLEDO, O.



CHERRY HILL INN, HADDONFIELD, N. J.

CEDARS OF LEBANON HOSPITAL
LOS ANGELES 29, CALIFORNIA
Libbey Glass
Division of Owens-Illinois
Toledo 1, Ohio
Gentlemen:
We have kept an accurate check of the service of our Libbey Heat-Treated Glasses, and have found them to have an almost endless life. In fact, they last so long that the cost of each serving is so small it is almost impossible to figure it. That's mighty important to an organization like ours where we must effect every economy yet always give the best in care and service.
Very truly yours,
William L. Anderson
William L. Anderson
Purchasing Agent
CEDARS OF LEBANON HOSPITAL
Illustrated on this attractive tray are Libbey Heat-Treated Glasses No. 606 (left) and No. 610 (right).
Libbey
HEAT-TREATED

Libbey Heat-Treated Glasses

give efficient, low-cost service at the Cedars of Lebanon Hospital,

LOS ANGELES, CALIFORNIA

MORE THAN 16,000 patients a year are benefited by the most modern care and treatment facilities of the Cedars of Lebanon Hospital. In its free clinic, over 100,000 visits per year are made by patients who cannot afford private care. For its glassware service the hospital selected Libbey Heat-Treated Glasses. Are they satisfied? We think the letter shown above speaks for itself.

Libbey Heat-Treated Glasses are specially processed to stand up 3-5 times longer than ordinary tumblers under the heaviest service conditions. They take hard knocks and sterilization temperatures in stride. Through reduced breakage, you need fewer glassware replacements, smaller inventory, less storage space. And you get additional savings through Libbey's chip-resistant rims, guaranteed: "A new glass if the rim of a Libbey 'Safedge' glass ever chips."

Your Libbey Supply dealer is ready with all the details. Call him today or write Libbey Glass, Division of Owens-Illinois, Toledo 1, Ohio.

LIBBEY SAFEDGE GLASSWARE
AN (I) PRODUCT

OWENS-ILLINOIS
GENERAL OFFICES • TOLEDO 1, OHIO

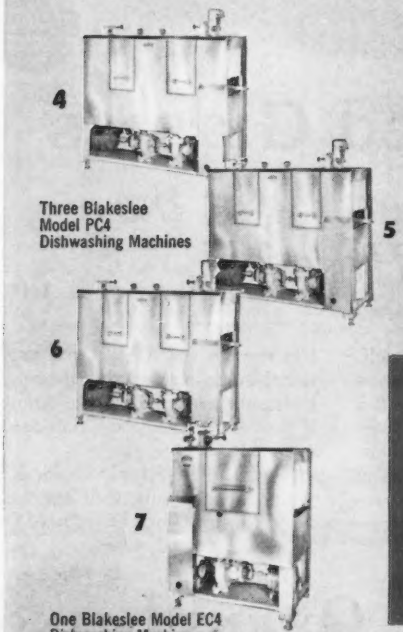
Architect and Engineer
Welton Becket, F.I.A.I. and Associates
Installation by
Harold E. Peterson, Inc. and
West Coast Fixture Co., Inc.

OVER 2 ACRES OF KITCHENS *in the fabulous* Beverly Hilton

1
22'7" Blakeslee
Model 86PT3
Dishwashing Machine

...SERVED BY SEVEN BLAKESLEE DISHWASHING MACHINES

2 3
Two Blakeslee Model DTC4 Dishwashing Machines



4 5 6 7
Three Blakeslee Model PC4 Dishwashing Machines
One Blakeslee Model EC4 Dishwashing Machine

In large and small establishments—when quality is a consideration—the ultimate choice is Blakeslee. Blakeslee-Built kitchen machines—dishwashers, peelers, mixers—have established a reputation for economical performance and efficiency for over 75 years.

Write for complete information on machines to fit your needs.

BLAKESLEE
KITCHEN MACHINES
DISHWASHERS • GLASSWASHERS
PEELERS • MIXERS AND ACCESSORIES

Since 1880
BLAKESLEE BUILT KITCHEN MACHINES
TRADE MARK REG. U.S. PAT. OFF.

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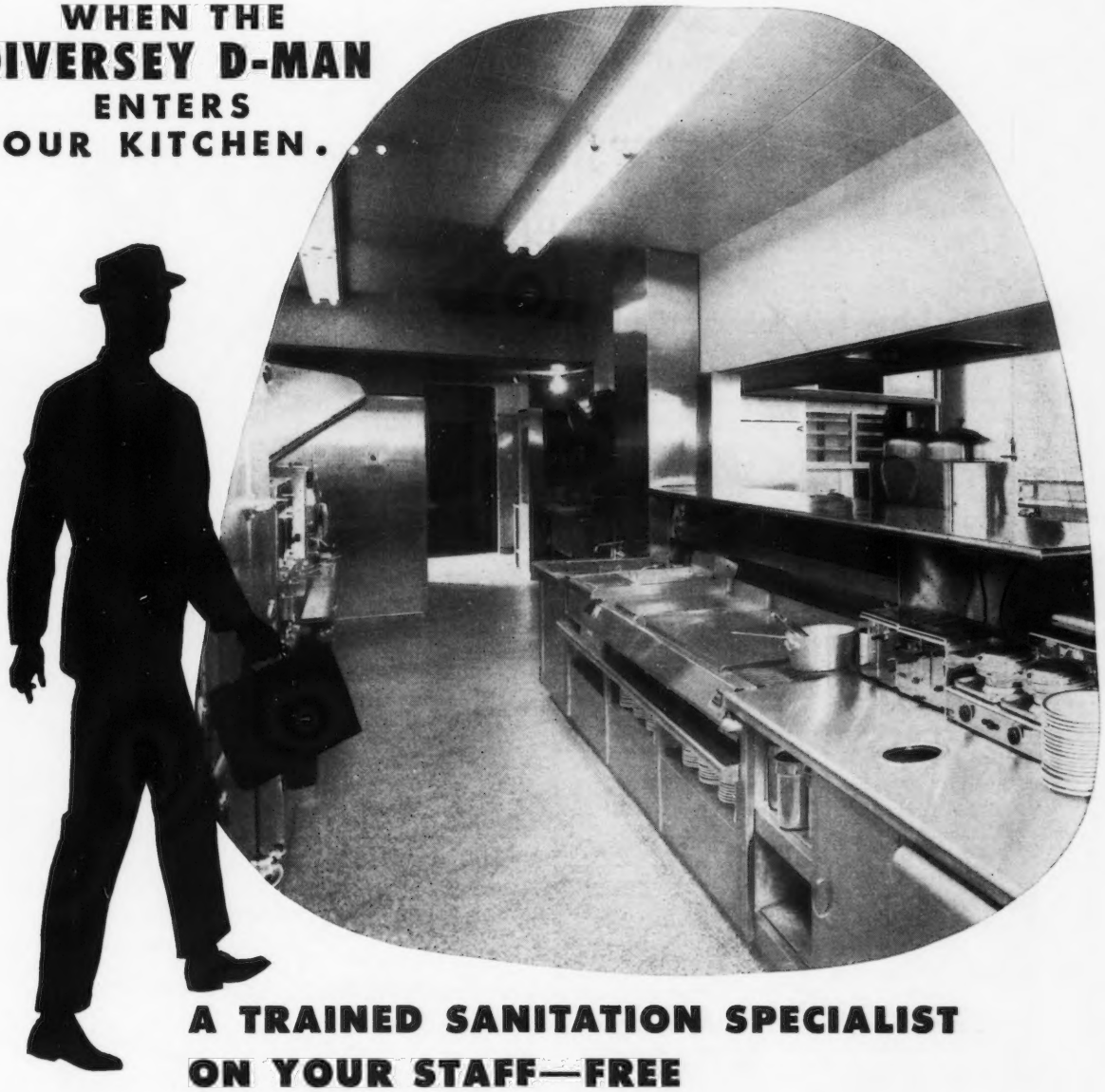
NEW YORK LOS ANGELES TORONTO

WHEN THE DIVERSEY D-MAN ENTERS YOUR KITCHEN . . .



A TRAINED SANITATION SPECIALIST ON YOUR STAFF—FREE

Here's a topnotch sanitation expert whom we will lend to you *free!* He knows how to ELIMINATE stained dishware, costly hand toweling, "almost clean" machine-washed dishes, irritated skin in hand-wash operations, crusted pans, harmful bacteria, and insect contamination! Repeat: he knows how to ELIMINATE these common kitchen sanitation problems!

He's your Diversey D-Man . . . a carefully trained sanitation specialist. His knowledge and experience plus the full facilities of the Diversey Research Laboratories are at your personal service. He can show you how others have increased efficiency in many sanitation operations . . . how they have reduced labor and material costs.

Get the facts on this unique Diversey D-Man service, as well as descriptive literature on the complete line of Diversey Sanitation Products. There is no cost or obligation for this information. Just call or write to:

MAKING SANITATION A SCIENCE

THE DIVERSEY CORPORATION

1820 Roscoe Street, Chicago 13, Illinois

(In Canada: The Diversey Corporation (Canada) Ltd., Port Credit, Ont.)

physiologically specific for the infant dietary

1.

Human breast milk:

"Just as the milk of other mammals is specific for their young, human milk is specific for young infants."

Haddy, T. B., and Adams, F. H.: J. Pediat. *40*:243 (Feb.) 1952.

2.

SIMILAC®

so similar to the milk of healthy, well-nourished mothers that there is no closer equivalent.

3.4%	Fat	3.4%
1.5%	Protein	1.7%
6.8%	Lactose	6.7%
50 mg./quart	Ascorbic Acid	50 mg./reliquefied quart

Other vitamins in adequate amounts

Milk minerals in favorable proportions

Fine, soft, fluid curd assuring rapid, easy digestion

Regular Similac feedings provide a source of nutritional protection; help reduce the incidence of complications encountered in the first year of life.

Similac feedings are simple to prepare

Supplied: as Powder in tins of 1 lb., with measuring cup; as Liquid in tins of 13 fl. oz.

M & R LABORATORIES, COLUMBUS 16, OHIO

Kellogg's QUICK QUIZ FOR DIETITIANS

Can you prescribe the right cereal for these special diet problems?

(Check your "prescriptions" with the answers below)

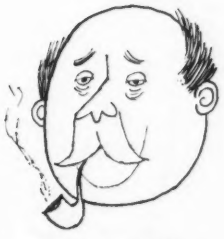
A. Low Sodium

B. High Vitamin

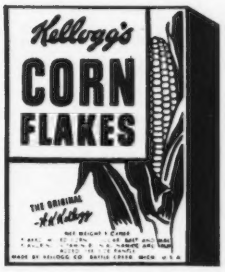
C. High Protein

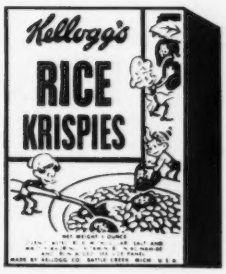
D. Bland

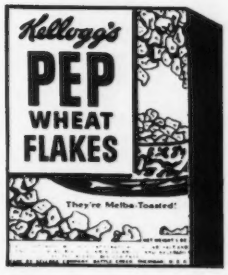
E. Wheat Allergy



F. High Residue



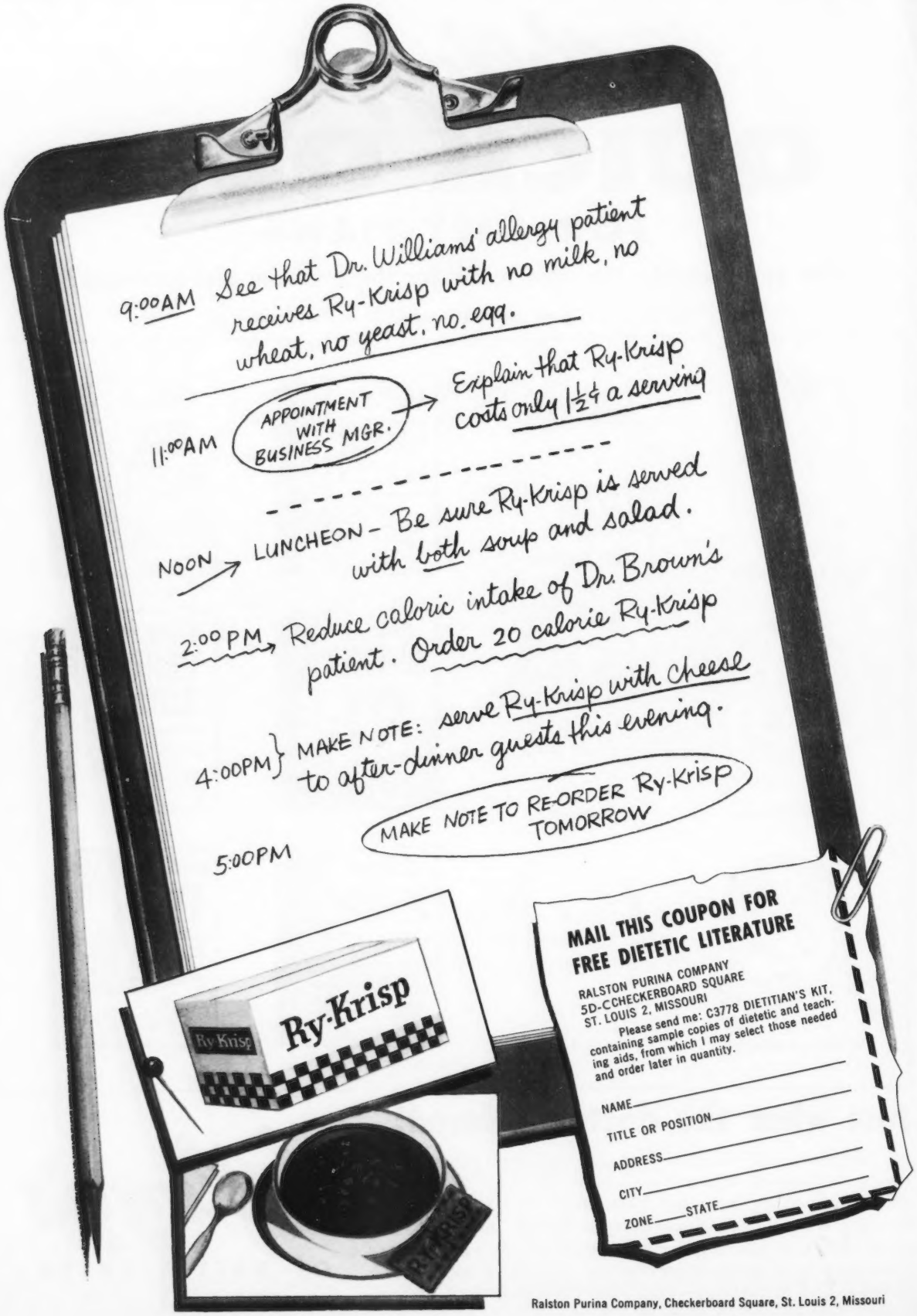




Just what the doctor ordered!

All Kellogg's cereals—all 12 of them—are made from pure whole grain . . . or restored to whole grain nutritive values. You were 100% correct if you prescribed these cereals: A. *Low Sodium*—Shredded Wheat (.001 sodium grams per oz.); B. *High Vitamin*—Pep (400 IU Vitamin D, .25 mg. Thiamine); C. *High Protein*—Corn Soya (5.10 grams of protein per oz.); D. *Bland*—Rice Krispies; E. *Wheat Allergy*—Corn Flakes (wheat free); F. *High Residue*—All-Bran (2.40 grams of fiber per oz.)

Kellogg's
OF BATTLE CREEK


9:00AM See that Dr. Williams' allergy patient receives Ry-Krisp with no milk, no wheat, no yeast, no egg.
11:00AM
APPOINTMENT WITH BUSINESS MGR.
Explain that Ry-Krisp costs only 1½¢ a serving
NOON
LUNCHEON – Be sure Ry-Krisp is served with both soup and salad.
2:00PM Reduce caloric intake of Dr. Brown's patient. Order 20 calorie Ry-Krisp
4:00PM MAKE NOTE: serve Ry-Krisp with cheese to after-dinner guests this evening.
MAKE NOTE TO RE-ORDER Ry-Krisp TOMORROW
5:00PM
Ry-Krisp
Ry-Krisp
MAIL THIS COUPON FOR FREE DIETETIC LITERATURE
RALSTON PURINA COMPANY
5D-CCHECKERBOARD SQUARE
ST. LOUIS 2, MISSOURI
Please send me: C3778 DIETITIAN'S KIT, containing sample copies of dietetic and teaching aids, from which I may select those needed and order later in quantity.
NAME
TITLE OR POSITION
ADDRESS
CITY
ZONE STATE
Ralston Purina Company, Checkerboard Square, St. Louis 2, Missouri

The scales are tipped in your favor!

Most of your patients need only a normal, well-balanced diet to supply all the nutrients essential to good health. And one of the safest and most practical ways to get these nutrients is in canned foods!

American Can Company, the world's leading manufacturer of metal containers, supplies the cans that bring these delicious foods to market with nature's nutrients locked in.

Just at the time fruits and vegetables, which are grown especially for canning, reach their maximum maturity in the field, they're picked, their enzymes are promptly inactivated, air is excluded during canning and container is hermetically sealed.

The advantages of canned foods over fresh foods are many: important nutrients of foods are preserved in airtight containers. The foods are ready to serve when needed and these wholesome products are available in containers in varying sizes to accommodate the needs of both large and small family units.

Containers to help people live better

American Can Company CANCO

New York, Chicago, San Francisco

Just Off MOSBY *Press!*

THE ART AND SCIENCE OF NUTRITION

A Textbook on the Theory and Application of Nutrition

By

ESTELLE E. HAWLEY, Ph.D., *Associate in Pediatrics and Nutrition, The University of Rochester Medical Center.*

GRACE CARDEN, B.S. (*Retired*) *Formerly Chief Dietitian, Strong Memorial and Rochester Municipal Hospitals*

ELIZABETH D. MUNVES, Ph.D., *Assistant Professor, School of Education, New York University.*

Fourth Edition **689 pages, 70 illustrations.** **Price, $5.25**

Especially designed for student use this text presents nutrition and Nutrition in Health and Disease clearly and concisely, wide in scope and of sufficient depth to provide a foundation for immediate use and future growth. It stresses the relation of nutrition to other sciences such as chemistry and physiology, and shows the role nutrition plays in everyday life. Also it demonstrates the importance of nutrition to health.

The fourth revision of the Daily Recommended Allowances released in March, 1954, has been included and the data recalculated to those figures. The food tables used are adapted from Handbook No. 8 and express the data on the basis of the average serving of food. The diet therapy also reflects the latest thoughts on the various conditions discussed.

The style has been changed somewhat and the order of the chapters adjusted to conform to the preferred teaching programs of the several authors. A major change in this edition is the removal of the laboratory section, revamping it into a separate laboratory workbook.

The purpose of the book remains unchanged: 1) To set forth the fundamentals of normal nutrition and to indicate why and how adjustments are made for those whose body dysfunction makes changes necessary. 2) To point out the role of nutrition in everyday life and the effect of racial, cultural, environmental, economic, and psychological factors. 3) To stress the positive value of nutrition in the attainment of efficiency, happiness, and longevity in individuals, families, and nations.

New Material in 1955 Edition

- Many new tables and illustrations throughout the text have been included while older ones have been deleted.
- A new chapter "The Fate of Foodstuffs".
- A new chapter "Food Custom and Culture Patterns".
- A new chapter "The Patient".
- References have been totally revised.
- Most recent sodium and potassium content of food tables were included.
- New diabetic exchange tables have been included.
- Table of food composition, U. S. Department of Agriculture, has been included instead of previous table.
- Work projects have been added.
- A chapter on "Racial Differences in Food Use".

New Arrangement of Material

- New chapter "Classifications and Functions of Nutrients" gives over-all view before covering in detail.
- Order of chapters on carbohydrates, fat and proteins has been changed to conform with order usually taken up in chemistry.
- The vitamin chapters have been separated into two parts—i.e. water soluable—fat soluable, usually approached that way.
- Changed heading of Section II to—Normal Nutrition—as it is not "Special Conditions" as in other editions.
- Rearranged chapters on diet therapy to follow one another in logical order.

NOTE: The Laboratory Manual designed for use with this text is still in preparation but will be available very early in 1956

THE C. V. MOSBY COMPANY
3207 Washington Blvd., St.Louis 3, Missouri. Date_____

Gentlemen: Send me the new Fourth Edition of "THE ART AND SCIENCE OF NUTRITION," by Hawley-Carden-Munves, just off the Mosby Press. Price, $5.25. Also send me when available the Laboratory Manual designed for use with this text.

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Hall China has all the qualities essential to good coffee service—a heavy, fireproof body that cannot absorb flavor or aroma; glaze that is pure, leadless and tasteless; thick walls that hold the heat. All Hall coffee pots are made by an exclusive process that inseparably fuses body, glaze, and color. Reasonable first cost and exceptional durability keep replacement at the lowest possible level.

Hall Coffee Pots are available in sizes ranging from individual to banquet service.

Write for Bulletin SM-1 which lists and illustrates Hall casseroles, baking dishes, coffee and teapots, creamers, jugs, ash trays, salads, and many other items available in 27 beautiful underglaze colors.

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The World's Largest Manufacturer of Fireproof Cooking China

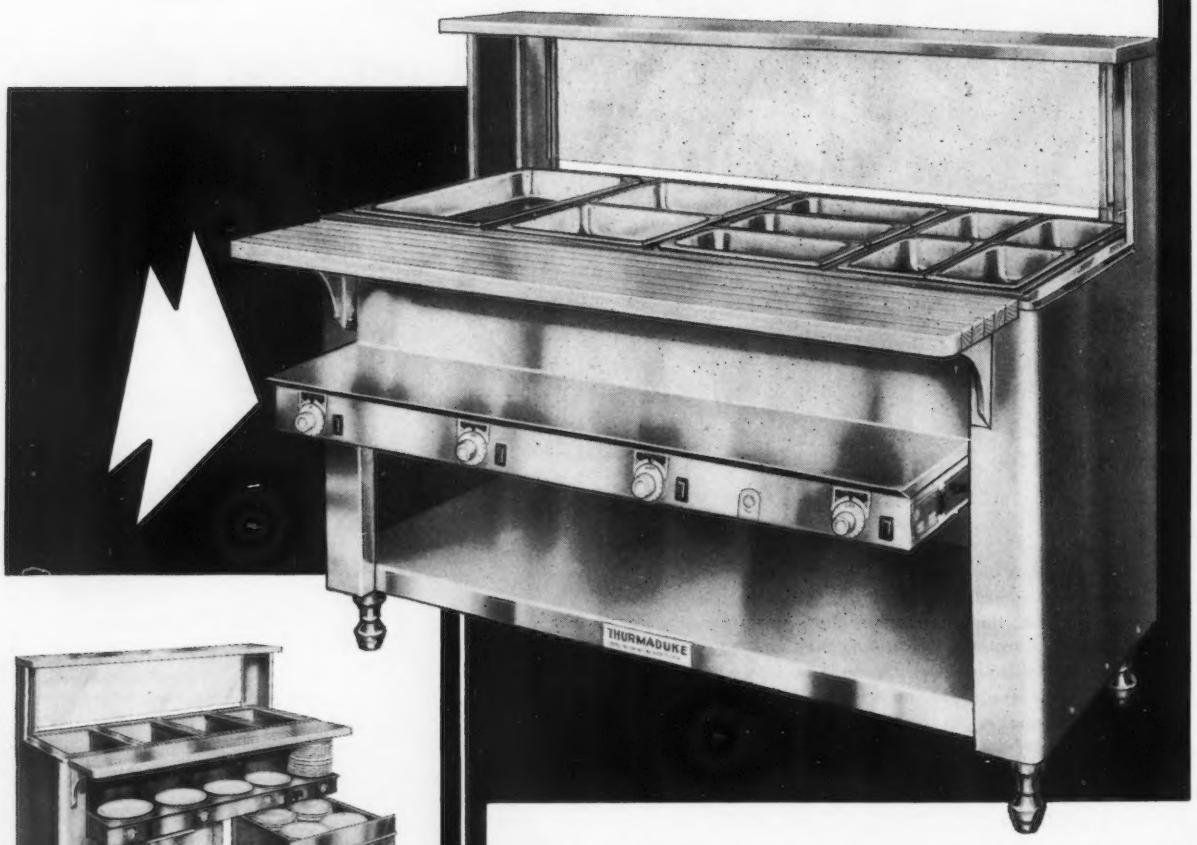
HALL
Secret Process
FIREPROOF CHINA

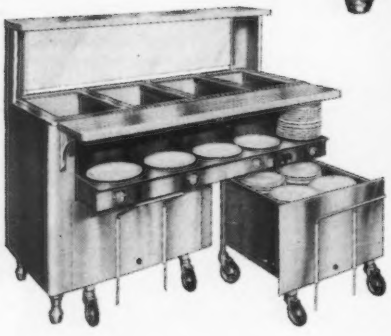
Hall coffee pots are carefully hand-finished by expert craftsmen.

NO OTHER FOOD WARMER OFFERS YOU ALL THE ADVANTAGES OF

THE NEW THURMADUKE
WATERLESS FOOD WARMER

With Integral Dish Shelf





These new Thurmaduke Models were designed feature by feature to save you endless hours of wasted time and many wasted dollars.

The new built-in dish shelf keeps your dishes handy, puts the controls at your finger-tips, easy to see, easy to adjust.

On electric models, a master control switch on the right end of the shelf turns the entire unit on and off without disturbing individual thermostat settings for each food compartment.

Heavy insulation in all four sides and bottom of each heating compartment reduces heat loss and provides maximum heat control.

All welded bodies of stainless steel or paint-grip steel with two coats of Thurmaduke Gray Enamel are designed for rugged service, easy sanitary maintenance. Aluminum alloy corrosion resistant adjustable legs are dirt, water and bug-proof. Sectional hard maple carving board can be removed without tools for cleaning.

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Please send complete information on
☐ Cafeteria Counters ☐ Food Warmers

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When a patient toys with his food, or flatly refuses to eat, chances are it just doesn't taste as good as it *could*. The cure for lack of flavor and jaded appetites is **MSG** (mono sodium glutamate) — "The Secret of Good Taste."

Mono sodium glutamate, an essential natural flavor component of protein foods, is often lost during processing, preparation, or retention on the steam table.

The original, natural fresh flavor can be restored by adding a small quantity of **MSG** to meats, poultry, fish, soups, vegetables, sauces and gravies before or during cooking.

Easy to use. *Simply add* **MSG** *in addition to, and in about the same proportion as salt.* Every meal will be at its flavor peak when served. Omit entirely in salt-free diets.

Try **MSG** *and discover "The Secret of Good Taste"*

MSG

99+% Pure Mono Sodium Glutamate Crystals

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Available in

10 lb. handsome canisters
1 lb. functional shaker-top cans

THE GREAT WESTERN SUGAR COMPANY

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throw away your wooden spoon

Calgonite Electronic Dispenser *stirs solution automatically*—prevents clogging with undissolved compound, and wasteful layering of solution in tank. Simple, foolproof electronic action keeps washing solution just right. Get a Calgonite Electronic Dispenser for truly *automatic* action.

CALGON, INC., HAGAN BLDG., PITTSBURGH 30, PA.

the perfect dishwashing team

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Washes *more* dishes *cleaner* on a lower cost-per-clean-dish basis.

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Simple, foolproof action; built-in stirrer assures top efficiency.

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Gentlemen: Without obligation, please send me further information on the new M-M Roasting and Baking Ovens.

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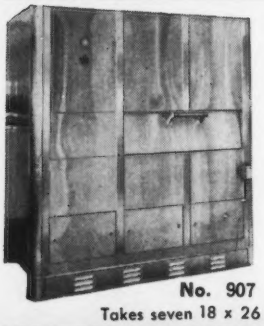
Complete your bakery equipment files Now with Middleby-Marshall's New catalog-folder:

A size and model to *meet* every requirement.

Since 1888 more bakers have bought built-for-life Middleby-Marshall Ovens than any other make. And Middleby-Marshall Ovens get better every year! Are you paying for a new oven through the inefficiencies of your present one? Are you interested in operating economies — easier, better production? Send for your copy of the New Middleby-Marshall Revolving Oven Catalog-Folder Now.

World's Largest Manufacturer of Bake Ovens—Since 1888



No. 907
Takes seven 18 x 26 pans

CUT DEEP FRYER COSTS WITH ANCO-X FAT AND OIL EXTENDER

Stops foaming, no more "mothering" the basket. Retards rancidity, and keeps oil fresh twice as long. It more than pays for itself by cutting frying costs, thereby increasing profits. Improves flavor and color of fried foods, too. Order Anco-X today.

ALL ANCO QUALITY PRODUCTS ARE SOLD ON A MONEY-BACK GUARANTEE

See your institutional food jobber or write direct to

ANCO

THIS NAME IS YOUR GUARANTEE OF FINEST QUALITY

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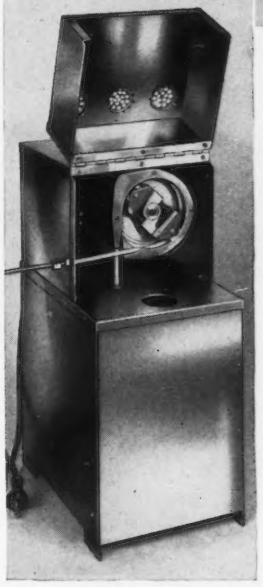
DRY DISHES *Faster*

KLENZADE



FLASH-DRI FEEDER

- ★ Eliminates Water Spotting
- ★ Economical to Use
- ★ Constant Feed of Drying Agent
- ★ Easy to Install

Klenzade Flash-Dri Feeder is an automatic rinse line injector specifically designed to continuously add Klenzade Flash-Dri, a drying agent, into final rinse line on dishwashing machines. Flash-Dri Feeder is a simple, positive tube-type pump with only one moving part. Operated by dependable pressure switch for automatic rinse line injection. Easily installed on any dish machine.

Simple Automatic Operation

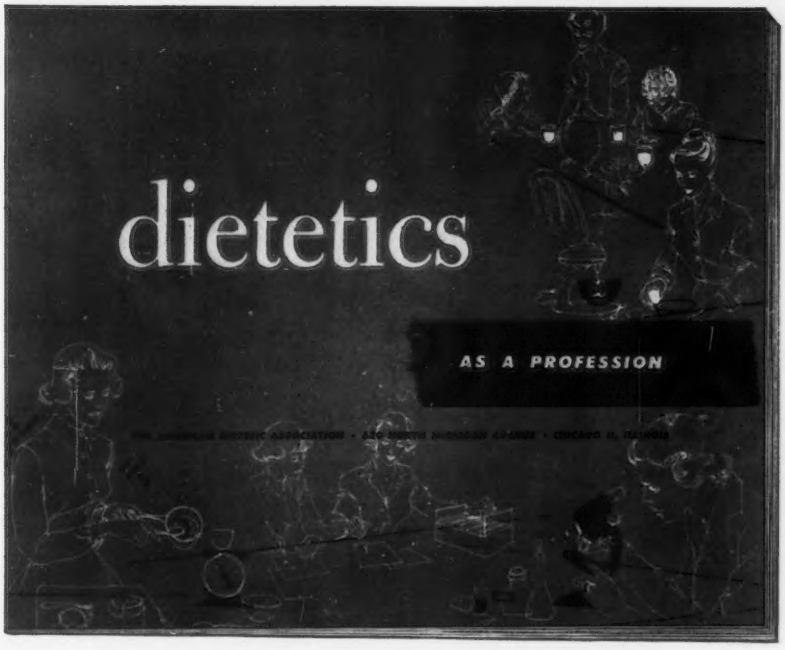
KLENZADE PRODUCTS, INC.
BELOIT, WISCONSIN

dietetics
as a profession

This handsome NEW guide to a wide choice of satisfying careers in dietetics and nutrition . . . just published!

Attractively designed . . . printed in color . . . with photographs and sketches . . .

Prices: 25c each, $20 for 100, $50 for 300.



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did you miss it?

Our life-saving film, BREAST SELF-EXAMINATION... Are you the fortunate "one" in every ten American women who *now* knows the simplest and most thorough way to examine her own breasts for signs that may mean cancer —while it is still in its early stage and chances of cure are the best? Or are you one of the other "nine" whom we are still trying to forewarn and forearm?

Our doctors assure us that BREAST SELF-EXAMINATION has already saved many a woman's life and *could* save many thousands more every year. They say that the lesson it teaches is the best "insurance" you can have against death from the commonest type of cancer in women over 35. That's because you yourself are more likely than your doctor to be the first to discover any lump or thickening that *might* mean cancer.

If you (or anyone you know) missed our film, we want to tell you where and when you can see it in your town. Call the American Cancer Society office nearest you or write to "Cancer" in care of your local Post Office.

American Cancer Society®

...with deliciously different
PETTIJOHNS MUFFINS

Looking for a way to add tempting *variety* to soft bulk diets? Try this new recipe for Pettijohns Muffins.

These nut-sweet, whole wheat muffins give patients a welcome change of menu ... yet provide the same safe, *gentle* bulk that's made Pettijohns *hot cereal** such an important part of special diets.

Patients enjoy golden, tender Pettijohns Muffins at *any* meal. And they're so easy to fix. Cost little. Serve these delicious muffins, made with nourishing Pettijohns Whole Wheat Cereal, often – the ideal "something different" for your soft bulk diets.

Serve Hot Pettijohns, too!

***A single serving (1 ounce, dry weight of Pettijohns, with sugar and four ounces of milk) makes this contribution to the minimum daily adult requirements:**

Thiamin	16.20%
Riboflavin	11.60%
Iron	11.60%
Calcium	19.20%
Phosphorus	28.00%

Plus whole grain food values of proteins, minerals and B vitamins.

A Product of
The Quaker Oats Company

PETTIJOHNS MUFFINS

Quick Bread
100 medium muffins

Portion: 2 muffins — Total Weight of Batter: 11 lb. 8 oz.

INGREDIENTS	AMOUNT	WEIGHT	COST
Flour, sifted	1½ quarts	1½ lb.	
Sugar	2 cups	1 lb.	
Soda	4 teaspoons		
Baking Powder	½ cup		
Salt	2 tablespoons		
Pettijohns Rolled Wheat	3 quarts	2 lb. 4 oz.	
Raisins (dates, figs, cooked prunes or nutmeats)	1 pt.	15 oz.	
Eggs, beaten	8 eggs	14 oz. (E.P.)	
Buttermilk	2 quarts	12 oz.	
Melted shortening	1½ cups		

Directions

1. Sift together flour, sugar, soda, baking powder and salt into mixer bowl. Add Pettijohns and raisins.
2. Add beaten eggs, buttermilk and melted shortening; beat at low speed only until dry ingredients are dampened, about ½ minute. *Do not overbeat.*
3. Fill greased muffin pans ⅔ full.
4. Bake in a hot oven (425° F.) about 20 minutes.

PETTIJOHNS MUFFINS — THE QUAKER OATS COMPANY INSTITUTIONAL KITCHEN

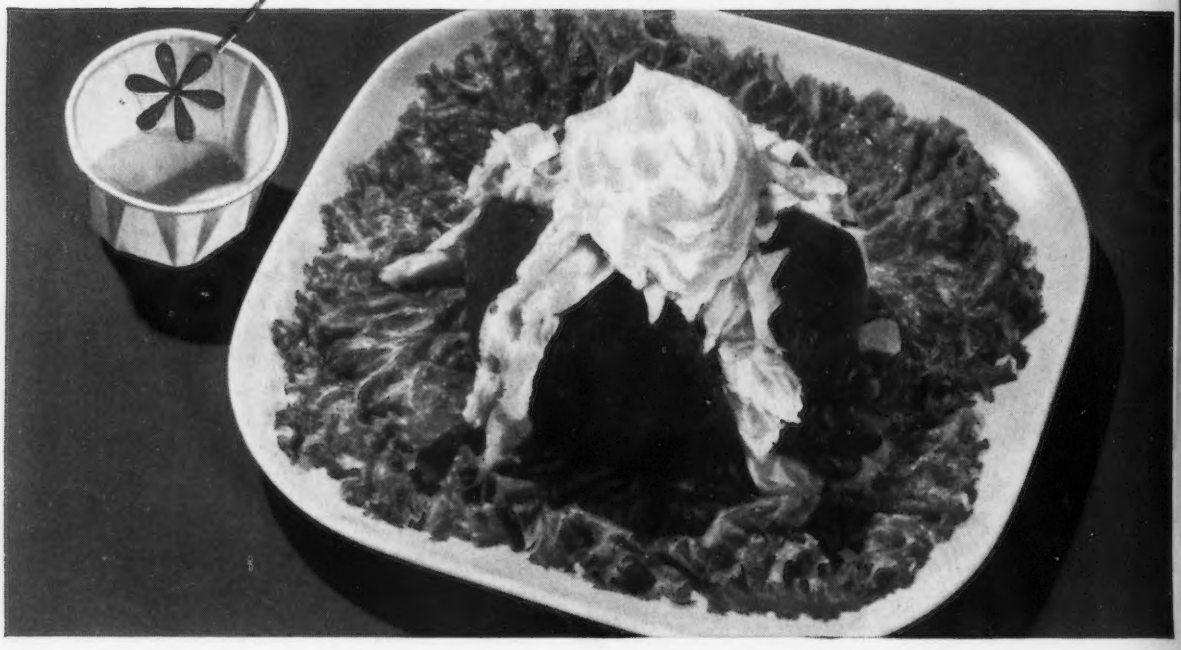
The cost of a soufflé cup

is the trifle more you pay per serving

to guarantee salad satisfaction when you use

Kraft Mayonnaise

The full-bodied, quality mayonnaise



Dress your salads with Kraft Mayonnaise and see for yourself how this high-quality dressing improves their taste. And this superior mayonnaise will cost you only slightly more per serving than ordinary mayonnaise—about as much as a single soufflé cup.

Kraft Mayonnaise delivers top results because it's true mayonnaise at its finest—luxuriously rich, made from costly salad oil, eggs, fragrant vinegar and seasoning. *Nothing else!*

Kraft Mayonnaise is available in 1-gallon jars and 4-gallon tins.

KRAFT Foods Company INSTITUTIONAL DIVISION

KRAFT FOODS COMPANY, 500 Peshtigo Court, Chicago 90, Illinois

The nation's taste is your best buying guide

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